ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE FUEL UTILIZATION IN CANADA - PHASE II

FINAL REPORT
BY
MONTREAL ENGINEERING COMPANY, LIMITED

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Attention: Dr. H. Whaley

Gentlemen:

Assessment of Potential Coal-Liquid Mixture Fuel
Utilization in Canada - Phase II
DSS File: 14SQ.234401-9080-1

Enclosed are copies of our final report on Phase II of the subject study, covering the remaining Maritime Provinces of New Brunswick, Prince Edward Island, and Newfoundland (Nova Scotia was covered in Phase I report).

With a copy of this letter, we forward one copy each of the report to Dr. R. Thomson, CANMET and Dr. Maureen Brock, Science Procurement Centre.

We would like to take this opportunity to thank you and Dr. R. Thomson for the attention and support received throughout this study and to express our appreciation to Dr. M. Brock for her kind co-operation.

Yours very truly,

S. Detre

S. Detre,
Manager, Thermal Study Group

SD/cr
Encl.
cc: Dr. M. Brock, DSS (Encl)
Dr. R. Thomson, CANMET (Encl)

PART 1

GENERAL

PART 1 - GENERAL

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1.1 INTRODUCTION

This study is a part of Canada's contribution to an international effort by the International Energy Agency to assess the potential markets for coal-liquid mixtures (CLM) as a viable substitute for the ever dwindling supply of fuel oil.

Contracted by the Canada Centre for Mineral and Energy Technology (CANMET), Montreal Engineering Company, Limited (Monenco), is assessing Canada's potential market for CLM in three consecutive phases, covering the industrial, commercial and utility markets. The Province of Nova Scotia, Canada's province most dependent on imported fuel oil, was examined in Phase I as a pilot project for the ultimate coverage of the country. The findings of this assessment were presented under a separate cover. The summary findings of Phase II assessment, examining the other Maritime Provinces (New Brunswick, Prince Edward Island and Newfoundland), are presented in this report. Phase III will cover the remaining provinces.

1.2 SCOPE

This study, based on the objectives described in the "Guidelines for Subtask A: Assessment of Potential CLM Utilization" provided by CANMET, covers the following areas:

- Subtask A1: Fuel resources.
- Subtask A2: Boiler and Combustor Data: A survey of the utility boilers, industrial boilers and industrial process heaters/combustors, rated at 20 million Btu/hr or greater, installed in Maritime Provinces (New Brunswick, Prince Edward Island, and Newfoundland).
- Subtask A3: Environmental Data: provincial emission standards for fuel combustion.

1.3 EXCLUSIONS

In agreement with the Scientific Authority, all aspects of coal and oil transportation and CLM preparation plants were excluded from this phase of the assessment.

1.4 METHODOLOGY

The methodology adopted to fulfill the objectives of the study was developed from the proposal submitted to the CANMET by Monenco in July 1981. It consisted of the following:

141 Resources

As advised by the New Brunswick Coal, Ltd. and New Brunswick Power, any coal needed for CLM conversion of oil-burning equipment in New Brunswick would have to be supplied from mines outside New Brunswick. This is also true for conversions in P.E.I. or Newfoundland. As instructed by the Scientific Authority, this report assumes that all coal required for CLM conversion in the Atlantic Provinces will be supplied from Nova Scotia. The particular mine considered for this purpose is the Donkin Mine, developed by Devco in the Sydney area. The production capacity of this mine is estimated at one megaton per year by 1985. However, as indicated in Section 122, when all oil-burning equipment is converted to either of the CLM fuels, the annual coal demand would be considerably higher than the Donkin Mine's estimated productive capacity or even the estimated productive capacity of the Donkin Mine and the Prince Mine (considered in Phase I report) combined. It is assumed that the additional demand can be met by coal imported from USA or other countries.

142 Oil-Fired Boiler Survey

Three slightly different questionnaire formats were prepared to accumulate the requested statistical data by CANMET. These consisted of the forms requesting information on:

- Utility boilers.
- Industrial boilers.
- Industrial Process heaters/combustors.

Provincial Boiler Inspector offices were contacted in each of the three provinces to obtain a list of oil-burning equipment rated at 20 million Btu/hr or greater. Furthermore, various other governmental and private agencies in each province were contacted for additional information in an attempt to make the survey as comprehensive as possible. The following statistics provide a perspective of the scope of the survey undertaken in each province.

a) New Brunswick

The Department of Labour provided a list of boilers operated in the Province. Every potential prospect in the list was contacted and of those meeting the minimum capacity rating the following were included in the study:

Utility Boilers - Six units from the Courtenay Bay and Coleson Cove Stations.

Industrial Boilers - Fifty-seven boilers owned by twenty-seven companies.

Industrial Heaters and Combustors - Four units owned by four companies.

b) Prince Edward Island

The Boiler Inspector's list was obtained. Only one industrial company and none of the Utility's boilers qualified for the survey.

c) Newfoundland

The Newfoundland Department of Labour and Manpower provided a list of boilers registered in the Province. The following units were included in the analysis:

Utility Boilers - Three boilers from the NFLD and Labrador Hydro's Holyrood Generating Station.

Industrial Boilers - Twenty-one boilers owned by eight companies.

Industrial Heaters and Combustors - Five units owned by three companies.

143 Environmental Regulations

In-house data were used to summarize the Provincial and local regulations on emission standards, water usage and waste disposal.

1.5 REPORT ORGANIZATION

151 Sequence

The sequence in this report complies with that of the "Guidelines", mentioned in Section 1.2 above, and is as follows:

- Subtask A1: Fuel Resources.
- Subtask A2: Boiler and Combustor Data.
- Subtask A3: Environmental Data.

The calculation of the required coal quantities is included in Appendices B and C of this report.

152 Numbering

For easier identification of the information by the IEA, we have also adopted the numbering system of the Guidelines.

PART 2

SUBTASK A1: FUEL RESOURCES

PART 2 - SUBTASK A1: FUEL RESOURCES

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1.0 COAL FOR CLM APPLICATIONS

Although some exploration of Newfoundland coal has been carried out in the past, no significant reserves have been discovered to date. Prince Edward Island has no coal resources. The data below provides the requested information only on the New Brunswick and the imported coal required for CLM applications.

1.1 Coal Supplies (Current Situation)

C. Domestic and Imported

Comments:

The only coal field in New Brunswick which is currently productive, is the one in the Minto/Chipman area with an average production rate of 570,000 short tons per year of bituminous coal (Ref. 1). Although some 40-45 megatons of proven and probable reserves are estimated to exist in this Province, the present mining capacity of coal in New Brunswick is entirely reserved for the consumption of the New Brunswick Electric Power Commissions' coal burning facilities and no significant production increases are currently planned for the next few years. An estimated rate of 18,000 s.t./yr of Nova Scotia coal is imported into the Province by a heating plant at Base Gagetown.

1.2 Estimated Additional Coal Requirement for CLM Applications

121 Due to the prevailing economic uncertainties, some respondants to our questionnaires declined to make any projections for their fuel consumption beyond 1982; others stated that the requirements will remain substantially unchanged from those in 1982; most others predicted cutbacks in production and therefore in fuel requirements due to decreasing market demands for their products or services. In many cases, no records were kept of the individual boilers' oil consumption rates. In these cases, estimates had to be made by Monenco on the basis of other information supplied by the Owner. (e.g. The actual pounds of steam generated in one year; the percentage of each unit's contribution to the plant's overall operation; etc.).

Accordingly, the 1985 coal demand rates were estimated on the basis of either the Owner's or Monenco's predictions of the Company's oil consumption rate beyond 1982.

122 The quantities were estimated for the following two cases:

.1 Every candidate boiler and heater converted to coal-oil mixture (COM).

.2 Every candidate boiler and heater converted to coal-water mixture (CWM).

With these assumptions, the following CLM coal consumption can be forecast for Maritime Provinces (excluding Nova Scotia) in the year 1985:

a.	All COM	2.34 megatons/yr.
b.	All CWM	4.87 megatons/yr.

1.3 This Increased Tonnage Can Be Met By:

B. Increased imported coal tonnage

Comments:

Any additional tonnage of coal, required in N.B., P.E.I. or Newfoundland will have to be met by an increase in coal imports. As advised by the Scientific Authority, the required additional coal was assumed to be provided by the Donkin Mine in Nova Scotia. Accordingly in the calculation of the required coal quantities, we used the heating value of Donkin mine coal rather than that of Coal Creek Coal, the characteristics of which are given below for information purposes only.

1.4 Coal Characteristics (As Received):

Although coals produced from different mines in the N.B. Grand Lake area vary slightly in characteristics, they are very much akin in most respects. The following analysis of the Coal Creek (Chipman area, dragline 7200) coal was chosen as New Brunswick's sample. It should be mentioned that this particular sample represents one of the lower quality coals of New Brunswick.

	Minto/Chipman Area*
HHV, Btu/lb	10,987

Proximate Analysis (in % weight)	
Volatiles	31.27
Fixed Carbon (By difference)	41.87
Ash	22.68
Moisture	4.14
Ultimate Analysis	
Carbon	58.27
Hydrogen	3.78
Sulphur	9.09
Nitrogen	0.59
Oxygen (By difference)	1.43
Ash	22.68
Grindability Index (Hardgrove)	62
Ash fusion temperatures (°F)	
Initial	2493.3
Softening	2573.3
Fluid	2603.3
Inorganic/organic sulphur ratio	7/2 **
Susceptibility to physical beneficiation	Not adequate for CLM applications due to the uniform distribution of mineral matters, especially pyrite, in the coal. Proper cleaning would require extremely fine grinding (e.g. to less than 20 microns).**

* Reference 2 (pg. 2-5)
** Reference 4 (pg. 2-5)

Comments:

As mentioned earlier, the analyses carried out in this study were based on the Donkin Mine Coal characteristics and not the New Brunswick coal.

The Donkin Mine coal characteristics are as follows:

	Donkin Mine*
HHV, Btu/lb	12,000

Proximate Analysis (in % weight)

Volatiles	30-32
Fixed Carbon	48-50
Ash	14-18**
Moisture	6

Ultimate Analysis (in % weight)

Carbon	64-85
Moisture	6
Hydrogen	5.5
Sulphur	2.6-4.5
Nitrogen	1.5
Oxygen	4.5-5.0
Ash	14

Grindability (Hardgrove)	65-70
Ash Fusion temperatures (°F)	
Initial	2444
Softening	2532
Fluid	2588

Inorganic/organic sulphur ratio	Not advisable to be presented as a fixed ratio since the inorganic sulphur content of the coal may vary considerably from time to time (i.e. it may range from 87/30 to 136/30).
Susceptibility to physical beneficiation	Yes, to some extent

* Reference 3 (pg. 2-5)
** Higher ash contents are expected prior to 1988.

1.5 Coal Type/Mine:

Donkin Mine — High-volatile A-bituminous

1.6 Mining Site

See attached map (Figure 1, Pg. 2-7)

2.0 OIL FOR CLM APPLICATIONS

2.1 Grade of Oil Used:

A. No. 6, Bunker C (for COM only)

Comment:

No. 2 oil would be used in small quantities if spherical coal agglomeration was introduced as a pretreatment for COM preparation.

2.2 Oil Supplies

B. Domestic, refined from Venezuelan crude

2.3 Oil Characteristics

Typical Type 6 Fuel Oils:

HHV (BTU/lb)	18000 - 18500
Sulphur content (%)	0.57 - 3.6
Vanadium content (ppm)	39 - 500
Asphaltine	Data Not Available
Pour point °F	5 - 85
Viscosity SFS@122°F	39 - 332
Flash Point °F	150 +

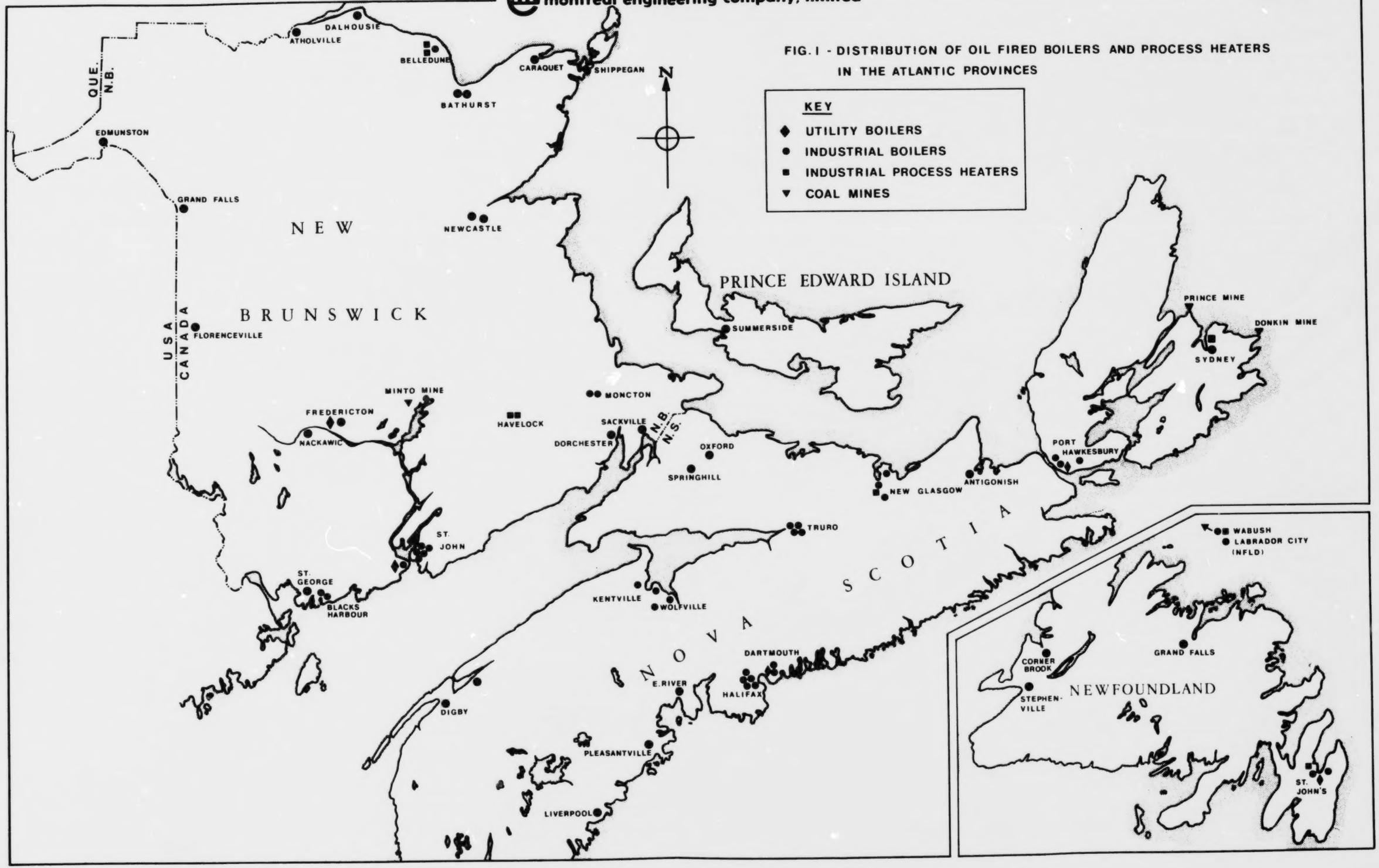
2.4 References

1. Private communications with Mr. R. Shaw and T. Barton of New Brunswick Coal.
2. Private communications with Mr. D. Sterling of New Brunswick Electric Power Commission. Attached in Appendix.
3. Information received from Cape Breton Development Corporation.

4. Private communications with Dr. E. Capes, NRC.

montreal engineering company, limited

FIG. 1 - DISTRIBUTION OF OIL FIRED BOILERS AND PROCESS HEATERS IN THE ATLANTIC PROVINCES



PART 3

SUBTASK A2: BOILER AND COMBUSTOR DATA

PART 3 - SUBTASK A2: BOILER AND COMBUSTOR DATA

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1.1 UTILITY OIL-FIRED BOILER CATEGORIES

110 General

The Guidelines establish the following sub-divisions for these boilers:

.1 Originally designed for coal-firing
.2 Originally designed for oil-firing
- . future coal capable
- . liberal design
- . compact design

and provide the definition for "future coal capable" as follows:

"An oil-designed boiler with future coal capability is a boiler which was designed with allowance for coal firing. It may have space for pulverizers, coal piping, and coal handling systems in the original design. It is possible that a future coal-capable boiler would have a large furnace volume and wider superheater tube spacing relative to a conventional oil-designed boiler." They also indicate characteristics for liberal design and compact design of oil-fired boilers, as follows:

Boiler Characteristics \ Category	Liberal Design	Compact Design
1. Furnace heat release rate, kBtu/cf/hr	17-22	22-31
2. Superheater tube spacing (first row, center-to-center)inches	12 or larger	6-12
3. Distance, top row burners to furnace outlet, ft.	35-45	Less than 35
4. Furnace exit gas temperature, °F	2100-2300	2300-2600
5. Maximum flue gas velocity, ft/sec	60-80	80-120

Boiler Characteristics \ Category	Liberal Design	Compact Design
6. Furnace bottom hopper	Adequately sloped furnace hopper with ash collection system	Lower sloped furnace hopper or flat furnace bottom without ash collection system

Of the four New Brunswick utility stations, the Dalhousie generating station and the Chatham generating stations were omitted from the analysis due to the N.B. Power Commission's decision to reduce their oil consumption to zero within the next few years. One boiler from the Courtenay Bay Station (Unit No. 1, rated at 450,000 lb/hr steam) was also excluded from the analysis due to N.B. Power's indication of zero oil consumption beyond 1982. The remaining three units at Courtenay Bay and the three units at the Coleson Cove Power Plant, were included in the study.

The Maritime Electric Company, Limited identified seven units of acceptable sizes at their Charlottetown Power Station. However, since the plant is on cold standby for nine months of the year, it was excluded from the study. Furthermore, space restriction inside the power station and environmental restrictions due to its downtown location will also discourage conversion of the boilers to CLM firing.

For much the same reasons (units on standby and plant location), two units at the St. John's Steam Plant owned and operated by the Newfoundland Light and Power Co., Limited, were excluded from the analysis.

The three units of Newfoundland and Labrador Hydro at the Holyrood Station were included in the study as shown below even though environmental restrictions may prevent the CLM conversion of this station.

111 Oil-Fired Utility Boiler, Originally Designed for Coal

None

112 Oil-Fired Utility Boiler, Originally Designed for Oil, Future Coal Capable

None

113 Oil-Fired Utility Boiler, Originally Designed for Oil, Liberal

A. Total Capacity in MWe 20

B. No. of Units 1

C. Age Distribution (No. and Capacity by Age)

Years Old	No. of Units	Capacity (MWe)
11-20	1	20

D. Size Distribution (No. and Capacity by Size)

Size (MWe)	No. of Units	Capacity (MWe)
10 - 100	1	20

E. Capacity Factor .45

F. Geographic Location See Map (Figure 1)

G. Major Manufacturers B & W

114 Oil-Fired Utility Boiler, Originally Designed for Oil, Compact

A. Total Capacity in MWe 1,655

B. No. of Units 8

C. Age Distribution (No. and Capacity by Age)

Years Old	No. of Units	Capacity (MWe)
11-20	4	500
1-10	4	1,155
Less than 1	-	-

D. Size Distribution (Number and Capacity by Size)

Size (MWe)	No. of Units	Capacity (MWe)
10 - 100	-	-
100 - 200	5	650
200 - 300	-	-
300 - 400	3	1,005

E. Capacity Factor
Range 0.29 - .93
Average (weighted) .48

F. Geographical Location — See map (Figure 1)

G. Major Manufacturers — Babcock and Wilcox
Combustion Engineering

2.1 INDUSTRIAL OIL FIRED BOILER CATEGORIES

210 General

The Guidelines established the following subdivisions for industrial boilers:

.1 Originally Designed for Coal-Firing
.2 Originally Designed for Oil-Firing
- Packaged Firetube Boilers
- Packaged Watertube Boilers
- Modular and Field-Erected Boilers

The first category of industrial boilers includes both stoker and pulverized coal-fired boilers which were converted to oil-firing when oil was economical and its supply guaranteed.

The second category is divided into three distinctive sub-categories. The firetube boilers are generally small. The package watertube boilers have been developed around the use of petroleum fuels. For these premium fuels, the furnace volumetric heat release rate is higher than for field-erected boilers. The compact design of a package watertube boiler results in closer tube spacings which consequently lead to higher gas velocities.

Detailed characteristics and type of industrial boilers as collected from the owners are included in Appendix A.

As indicated in our report on Phase I (covering Nova Scotia) one other category, boilers originally designed for dual fuel combustion, was identified in addition to the above listed major

design categories specified in the Guidelines. While only few boilers of this type were found in Phase I, our market survey, covering the other Maritime Provinces and also the rest of Canada, indicates that many boilers of the major pulp and paper industries and refineries would fall into this category. In order to comply with the categories specified in the Guidelines, those units originally designed for dual fuel combustion which generated more than 30 percent of their annual production by fuel oil, were categorized as units originally designed for oil. However, their alternative fuels have also been indicated in each case in the data sheets displayed in Appendix A.

Of all the companies contacted in the three Provinces, only one company, the Irving Oil Limited of St. John, N.B., withheld the information on their units and refused to participate in the survey on grounds of "Company policy".

From the responses received, some companies or units were excluded from the analysis because of the following reasons:

Company	No. of Units	Total Steaming Capacity (lb/hr)	Reason for Exclusion
St. John Shipbuilding, N.B.	1	50,000	Standby unit
Fraser Inc., N.B.	1	60,000	Insignificant oil consumption rate
St. John Regional Hospital, N.B.	2	39,000	Units to be "mothballed" by Aug. 82
CIP Inc., N.B.	1	120,000	Zero oil consumption projected by 83
Consolidated Bathurst Inc., N.B.	2	149,000	Zero oil consumption projected by 83
Restigouche Hospital, N.B.	2	39,200	Insignificant oil consumption rate
Dept. of National Defence, N.B.	3	210,000	Insignificant oil consumption rate
MacMillan Rothesay Ltd., N.B.	1	225,000	Insignificant oil consumption rate
Iron Ore Company of Canada, Nfld.	4	150,000 (equivalent)	Zero oil consumption rate projected by 83

The Iron Ore Company of Canada's Newfoundland plant represents more than 2/3 of all the qualified oil-fired industrial heaters in the three provinces. Among the oil-fired equipment operated by this Company are six pelletizing machines, which consume a total of almost 1 million barrels of oil per year. Conversion of these units to CLM fuels would require certain modifications of design and operation in order to prevent the contamination of the products by

the high ash and sulphur content of the flue gas. Since, technically, the conversion of these units to burn CLM is considered feasible, the units were included in the analysis along with the other industrial process heaters and combustors. Appendix A presents detailed information on industrial heaters and combustors covered in this survey.

211 Oil-Fired Industrial Boiler, Originally Designed for Coal

A. Total Capacity in input heat rate, MW_t 793

B. Number of Units (boilers) 18

C. Age distribution (Number and Capacity by Age)

Years Old	No. of Units	Capacity (MWt)
over 50	3	123
41-50	2	53
31-40	9	217
21-30	4	132
11-20	-	-
1-10	1	85
Less than 1	-	-

D. Size distribution (Number and Capacity by Size)

Size (MWt)	No. of Units	Capacity (MWt)
6 - 13.9	3	22
14 - 27.9	4	88
28 - 57.9	9	292
58 - 87.9	3	208

E. Capacity Factor

Range	.14-.63
Average (Weighted)	.43

F. Geographical distribution — See map (Figure 1)

G. Major Manufacturers of boilers — Combustion Engineering, Babcock & Wilcox, Foster Wheeler

H. Major industrial users — Sugar industry; Pulp & Paper industries; Penitentiary

212 Oil-Fired Industrial Boiler, Originally Designed for Oil-Package, Firetube

A. Total capacity in input heat rate, MW_t — 67

B. Number of units — 8

C. Age distribution (Number and Capacity by Age)

Years Old	No. of Units	Capacity (MWt)
over 50	-	-
41-50	-	-
31-40	-	-
21-30	-	-
11-20	3	21.2
1-10	-	-
Less than one	5	34.1

D. Size distribution (Number and Capacity by Size)

Size (MWt)	No. of Units	Capacity (MWt)
6 - 13.9	8	55.3
14 - 27.9	-	-
28 - 57.9	-	-
58 - 87.9	-	-

E. Capacity Factor

Range	.08-.18
Average (Weighted)	.15

F. Geographical distribution — See map (Fig. 1)

G. Major manufacturers of boilers — Cleaver Brooks; Volcano

H. Major industrial users — Hospital; Fisheries; Public Works

213 Oil-Fired Industrial Boiler, Originally Designed for Oil, Package, Water-tube

A. Total capacity in input heat rate, MWt 815

B. Number of units 40

C. Age distribution (Number and Capacity by Age)

Years Old	No. of Units	Capacity (MWt)
over 50	-	-
41-50	-	-
31-40	-	-
21-30	5	66.5
11-20	21	346.4
1-10	14	264.4
Less than one	-	-

D. Size distribution (Number and Capacity by Size)

Size (MWt)	No. of Units	Capacity (MWt)
6 - 13.9	17	167.6
14 - 27.9	16	273.7
28 - 57.9	7	236
58 - 87.9	-	-

E. Capacity Factor

Range	.02-.50
Average (Weighted)	.25

F. Geographical distribution — See map (Figure 1)

G. Major manufacturers of boilers — Babcock & Wilcox
Combustion Engineering
Foster Wheeler
Cleaver Brooks
Dominion Bridge
J. Inglis
Volcano
Zurn

H. Major industrial users — Fisheries; Pulp & Paper Industry; Food Industries; Shipbuilding; Mining & Smelting; Breweries;

Universities; Hospitals; Chemical Industries; Forest Industry

I. Type of boilers — A; D; O

214 Oil-Fired Boiler, Originally Designed for Oil, Modular and Field-Erected, Water-tube

A. Total capacity in input heat rate, MWt — 1,219

B. Number of units — 14

C. Age distribution (Number and Capacity by Age)

Years Old	No. of Units	Capacity (MWt)
Over 50	-	-
41 - 50	-	-
31 - 40	-	-
21 - 30	5	251.4
11 - 20	4	263.7
1 - 10	4	371.6
Less than 1		

D. Size distribution (Number and Capacity by Size)

Size (MWt)	No. of Units	Capacity (MWt)
6 - 13.9	-	-
14 - 27.9	1	23.5
28 - 57.9	6	257.3
58 - 87.9	1	73.3
88 - 116.9	3	283.7
117 - 146.9	2	249.1

E. Capacity factor

Range	.03-.83
Average (Weighted)	.45

F. Geographical distribution — See map (Fig. 1)

G. Major manufacturers of boilers — Babcock & Wilcox; Foster Wheeler; Combustion Engineering; Dominion Bridge

H. Major industrial users — Pulp & Paper Industries; Mines

3.1 OIL-FIRED PROCESS HEATERS AND CUMBUSTORS

The Guidelines establish the following categories for the process heaters and combustors:

"The oil-fired industrial process heaters and combustors will be classified into the following categories according to the original design fuel, the industry and the application.

.1 Originally designed for coal-firing
- Industry
- Application

.2 Originally designed for oil-firing
- Industry
- Application"

311 Oil-Fired Industrial Process Heater, Originally Designed for Coal, Industry and Application

- None -

312 Oil-Fired Industrial Process Heater, Originally Designed for Oil, Steel Industry

A. Total capacity in input heat rate, MW_t — 1,327

B. Number of units (heaters) — 26

C. Age distribution (Number and Capacity by Age)

Years Old	No. of Units	Capacity (MWt)
11-20	31	624
1-10	4	195
Less than one	-	-

D. Size distribution (Number and Capacity by Size)

Size (MWt)	No. of Units	Capacity (MWt)
5 - 14	22	178
15 - 29	3	-
30 - 60	8	401
Larger than 60	2	240

E. Capacity factor

Range	.24 - .44
Average (Weighted)	.35

F. Geographical distribution — See map (Figure 1)

G. Major manufacturers of heaters — Aerofall Mill; North American Mfg.; Foster Wheeler Limited

H. Major industrial users — Steel Industry

I. Application processes — ore drying; pellet induration

313 Oil-Fired Industrial Process Heater, Originally Designed for Oil, Other Industries

A. Total capacity in input heat rate, MWt — 138

B. Number of units (heaters) — 9

C. Age distribution (Number and Capacity by Age)

Years Old	No. of Units	Capacity (MWt)
11 - 20	9	470

D. Size distribution (Number and Capacity by Size)

Size (MWt)	No. of Units	Capacity (MWt)
5 - 14	5	175
15 - 29	4	295

E. Capacity factor

Range	.11 - .94
Average (Weighted)	.48

F.	Geographical location	See map (Figure 1)
G.	Major manufacturers of heaters	Cleaver Brooks Peabody Combustion Allis Chambers Bigelow Liptack Combustion Engineering Ultramar Dorr-Oliver-Long
H.	Major industrial users	Fisheries, Mining; Refinery; Cement
I.	Application processes	Fertilizer and raw material drying, lime kiln; heating; meat production; gas and crude heating.

SUBTASK A3: ENVIRONMENTAL DATA

PART 3 - SUBTASK A3: ENVIRONMENTAL DATA

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INTRODUCTION

Data and information on Sections 1.0 to 5.0 of Subtask A3, covering the National Regulations have been presented in Phase I report. Therefore, this report presents only the local regulations devised for the Provinces of New Brunswick, P.E.I., and Newfoundland.

To comply with the Guidelines' sequence of numbering, each topic is repeated twice to outline the data for each Province (The information and data concerning the New Brunswick and P.E.I. are presented jointly in one Section due to similarity.)

NEW BRUNSWICK

AND

PRINCE EDWARD ISLAND

5.0 LOCAL REGULATIONS ON TRANSPORTATION, PREPARATION, STORAGE AND HANDLING - NEW BRUNSWICK AND P.E.I.

5.1 Fugitive Dust

Refer to Section 5.3, Comments

5.2 Leaching From Coal Storage Piles

Refer to Section 5.3, Comments

5.3 Hydrocarbon Emissions

Comments:

Environment New Brunswick and the P.E.I. Environmental Protection Branch do not have regulations as such which cover the environmental concerns related to the transportation, preparation, storage and handling of coal and coal liquid mixtures. Instead, these Provinces operate on a permit system for new facilities and for proposed modification to existing facilities. Specific requirements covering fugitive dusts, leaching from coal storage piles, control of hydrocarbon emissions, in fact, all relevant aspects of water usage, solid and liquid waste disposal and air emissions are set, if deemed necessary by the Province, on a case-by-case basis. Site specific factors will determine whether the Federal standards (if applicable) are adopted or whether more stringent limits are imposed in each case.

6.0 LOCAL REGULATIONS ON EMISSION STANDARDS - NEW BRUNSWICK AND P.E.I.

Environment New Brunswick generally adopts the maximum 'acceptable' concentrations for air contaminants as outlined in the Federal Ambient Air Quality Objectives (Table 1). However, the 'desirable' concentrations are normally applied to areas where there is more than one source of contamination present. Environment New Brunswick are primarily interested in SO_2 and NO_x emissions. For new installations, the Federal guidelines for SO_2 and NO_x emissions are normally applied. SO_2 emissions are normally negotiated on a case by case basis such that emission levels will be in the vicinity of 0.6 lb $SO_2/10^6$ BTU. For conversions from Bunker C, Environment

New Brunswick generally requires that emission levels remain the same or are reduced. Any modifications to an existing source would require a new approval.

The P.E.I. Environmental Protection Branch has generally adopted the 'desirable' concentrations outlined in the Federal Ambient Air Quality Objectives. Applications for new facilities and for proposed modifications to existing facilities would be reviewed on a case-by-case basis.

7.0 LOCAL REGULATIONS ON WATER USAGE - NEW BRUNSWICK AND P.E.I.

Refer to Section 5.3, Comments

TABLE 1

Federal Ambient Air Quality Objectives for Air Contaminants

Contaminant	Units	Concentrations Desirable	Acceptable	Tolerable	Comments
Sulphur dioxide	$\mu g/m^3$	0-30	30-60	-	Annual arithmetic mean
		0-150	150-300	300-800	Over a 24 hr period
		0-450	450-900	-	Over a 1 hr period
Suspended particulate matter	$\mu g/m^3$	0-60	60-70	-	Annual geometric mean
		-	0-120	120-400	Over a 24 hr period
Carbon monoxide	$\mu g/m^3$	0-6	6-15	15-20	Over an 8 hr period
		0-15	15-35	-	Over a 1 hr period
Oxidants (ozone)	$\mu g/m^3$	-	0-30	-	Annual arithmetic mean
		0-30	30-50	-	Over a 24 hr period
		0-100	100-160	160-300	Over a 1 hr period
Nitrogen dioxide	$\mu g/m^3$	0-60	0-100	-	Annual arithmetic mean
		-	0-200	200-300	Over a 24 hr period
		-	0-400	400-1000	Over a 1 hr period
Hydrogen sulphide	$\mu g/m^3$	-	0-5	-	Over a 24 hr period
		0-1	1-15	-	Over a 1 hr period
Hydrogen fluoride	$\mu g/m^3$	-	0-0.20[1]	-	70 day average
		-	0-0.35[1]	-	30 day average
		0-0.20[1]	0.20-0.55[1]	-	7 day average
		0-0.40[1]	0.40-0.85[1]	-	24 hr average

Sources: - The Clean Air Act - Compilation of regulations and Guidelines
Regulations Codes and Protocols Report EPS-1-AP-78-2
Air Pollution Control Directorate, November 1978
- 1981-1982 APCA Directory and Resource Book, Special Anniversary Edition,
Air Pollution Control Association

[1]Proposed

7.1 & 7.2 Local Impact of Water Usage in Coal and CLM Preparation Plants

Comments:

Since service streams are used to dispose of the majority of the wastes produced by a station which do not escape into the atmosphere, the volume of intake generally reflects the volume of wastewater to be treated and discharged and the impact that these discharges will have on the environment. As indicated previously in Section 5.3, these aspects can really be assessed only on a case-by-case basis.

The impacts of individual CLM boilers and preparation plants will depend upon variables such as fuel characteristics, discharge volumes, effluent treatment practices and the nature of the receiving water system. These impacts must be assessed on a case-by-case basis.

8.0 LOCAL REGULATIONS ON WASTE DISPOSAL - NEW BRUNSWICK AND P.E.I.

Refer to Section 5.3, Comments

8.1, 8.2, & 8.3 Local Impact of Incremental Waste Disposal from Boilers Firing CLM, CLM Preparation Plants, and Coal Preparation Plants

Refer to Section 7.1/7.2, Comments

NEWFOUNDLAND

5.0 LOCAL REGULATIONS ON TRANSPORTATION, PREPARATION, STORAGE AND HANDLING - NEWFOUNDLAND

The Province of Newfoundland does not have regulations which apply specifically to the transportation, preparation, storage and handling of coal because coal is not used to fire utility boilers and large process heaters at the present time.

5.1 Fugitive Dust

Refer to 'dust fall' limit given in Table 3.

5.2 Leaching From Coal Storage Piles

The Province of Newfoundland does not have regulations which apply specifically to leachate from coal storage piles. However, limits have been placed on the quality of liquid effluents which discharge into a body of water. This would include leachates from any stockpiled materials including coal piles and ash disposal areas. These limits are given in Table 2.

5.3 Hydrocarbon Emissions

Refer to limits for 'oil and grease' given in Table 2.

6.0 LOCAL REGULATIONS ON EMISSIONS STANDARDS - NEWFOUNDLAND

Newfoundland has adopted the 'acceptable' concentrations for SO_2, ozone and NO_x which are outlined in the Federal Ambient Air Quality Objectives. In addition, Newfoundland has set limits on ambient levels for several other air contaminants as outlined in Table 3. These limits apply primarly to new installations. For existing installations, compliance is negotiated on a case-by-case basis.

7.0 LOCAL REGULATIONS ON WATER USAGE - NEWFOUNDLAND

New regulations governing water usage are currently being prepared. These were not available at the time of compilation.

7.1 & 7.2 Local Impact of Water Usage in Coal and CLM Preparation Plants

Comments:

Since service streams are used to dispose of the majority of the wastes produced by a station which do not escape into the atmosphere, the volume of intake generally reflects the volume of wastewater to be treated and discharged and the impact that these discharges will have on the environment.

The impacts of individual CLM boilers and preparation plants will depend upon variables such as fuel characteristics, discharge volumes, effluent treatment practices and the nature of the receiving water system. These impacts must be assessed on a case-by-case basis.

TABLE 2

Specific Limits for Effluent Quality

Province of Newfoundland

Parameter	Concentration
Temperature (°C)	32
Dissolved solids	1000
Suspended solids	30
Oil and grease	15
Floating debris	Not visible
BOD_5	20
As	0.5
Be	5
B	5
Cd	0.05
F	1.0
Cr^{6+}	0.05
Cr^{3+}	1.0
Cu	0.3
CN	0.025
Fe (total)	10.0
Hg	0.005
Ni	0.5
NO_3	10
NH_3	2.0
Pb	0.2
Phenol	0.4
Phosphate (as P_{205})	1.0
Phosphorus	0.0005
Se	0.01
Sulphide	0.5
Silver	0.05

Note: (1) All values in mg/L unless indicated otherwise
(2) All values are in excess of background values

TABLE 3

Ambient Air Quality Regulations

Province of Newfoundland

Contaminant	Units	Concentration	Comments
Sulphur dioxide(1)	$\mu g/m^3$	60	Annual arithmetic mean
		300	Over a 24 hr period
		900	Over a 1 hr period
Dust fall	$mg/100\ cm^3$	46	Annual arithmetic mean
		70	Over a 30 day period
Carbon monoxide	mg/m^3	10	Over a 24 hr period
		15	Over an 8 hr period
		35	Over a 1 hr period
Ozone(1)	$\mu g/m^3$	30	Annual arithmetic mean
		50	Over a 24 hr period
		160	Over a 1 hr period
Nitrogen dioxide(1)	$\mu g/m^3$	100	Annual arithmetic mean
		200	Over a 24 hr period
		400	Over a 1 hr period
Hydrogen sulphide	$\mu g/m^3$	30	Over a 1 hr period
Hydrogen fluoride	$\mu g/m^3$	0.45	Over a 30 day period
		0.90	Over a 24 hr period
Total fluoride	$\mu g/m^3$	1.9	Over a 30 day period
		1.8	Over a 24 hr period
Methyl mercaptan	$\mu g/m^3$	20	Over a 1 hr period
Lead	$\mu g/m^3$	2	Over a 30 day period
		5	Over a 24 hr period

Notes: (1) Same as Federal Ambient Air Quality Objectives - 'acceptable concentrations'.

8.0 LOCAL REGULATIONS ON WASTE DISPOSAL - NEWFOUNDLAND

Newfoundland does not have regulations which apply to the disposal of wastes from coal or CLM fired installations. Limits however have been imposed on the quality of liquid effluents in general. These have been discussed in Section 5.2.

8.1, 8.2, & 8.3 Local Impact of Waste Disposal from Boilers Firing CLM, CLM Preparation Plants and Coal Preparation Plants - Newfoundland

Refer to Section 7.1/7.2, Comments.

Personal Communications

Kresta, V., Water Quality Branch, Environment New Brunswick

Knight, J., Air Quality Branch, Environment New Brunswick

Power, B., Director of Environmental Engineering, Newfoundland

Francis, R., Chief - Water Resources, P.E.I.

Phillips, W., Chief - Air and Solid Wastes, P.E.I.

APPENDIX A

SURVEY FORMS AND RESPONSES

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.1: UTILITY OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: N.B. Power

Postal Address: 529 King Street
Fredericton, N.B.
E3B 4X1

Name of Plant: Coleson Cove Generating Station

Postal Address: St. John, N.B.

Please enter data or check as appropriate:

350

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1976	1976	1977			
Design Capacity (lb/hr)		2,158,000	2,158,000	2,158,000			
Steam Conditions	Press. (PSIG)	2450	2450	2450			
	Temp. (°F)	1005	1005	1005			
Actual Pounds of Steam Generated in One Year[1]		9.6×10^9	6.7×10^9	10.2×10^9			
Annual Oil-Consumption Rate (Imp. Gals/Yr.)	1980	80,433,000	55,953,400	87,430,000			
	1982(Projected)	55,297,700	38,468,000	60,108,100			
	Beyond '82 (Proj.)	38,960,000	27,102,450	42,350,000			
Please Specify Type of Oil Used		No.6	No.6	No.6			
Boiler Originally Designed for	Coal - Firing						
	Oil - Firing	X	X	X			
No. of Oil Burners		16	16	16			
Furnace Heat Release Rate (Btu/cu ft./hr)		23,150	23,150	23,150			
Check Appropriate Furnace Bottom Hopper Arrangement	Sloped with Ash Collection						
	Low Slope/Flat Without Ash Collection	X	X	X			
If originally designed for oil-firing, was there any design consideration for future coal-firing such as space for pulverizers, coal piping, electrostatic precipitators, etc.		No	No	No			
Boiler Manufacturer		B & W	B & W	B & W			
Unit's Capacity Factor		.51	.35	.54			

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments:

The above information was supplied by:

Name: V.K. Clark

Position: Manager, Thermal Plant Operations

Telephone: (506)453-3058

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.1: UTILITY OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: N.B. Power

Postal Address: 529 King Street
Fredericton, N.B.

Name of Plant: Courtenay Bay

Postal Address: 509 Bayside Drive
St. John, N.B.

Please enter data or check as appropriate:

351

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation			1964	1966	1967		
Design Capacity (lb/hr)			210,000	710,000	710,000		
Steam Conditions	Press. (PSIG)		1250	1800	1800		
	Temp. (°F)		950	1000	1000		
Actual Pounds of Steam Generated in One Year[1]			833×10^6	5.8×10^9	4.64×10^9		
Annual Oil-Consumption Rate (Imp. Gals/Yr.)	1980		5,297,335	32,402,429	25,564,341		
	1982(Projected)		5,290,000	20,160,000	16,632,000		
	Beyond '82 (Proj.)		5,300,000	15,120,000	3,220,000		
Please Specify Type of Oil Used			No.6	No.6	No.6		
Boiler Originally Designed for	Coal - Firing						
	Oil - Firing		X	X	X		
No. of Oil Burners			4	12	12		
Furnace Heat Release Rate (Btu/cu ft./hr)			17,400	22,000	22,000		
Check Appropriate Furnace Bottom Hopper Arrangement	Sloped with Ash Collection						
	Low Slope/Flat Without Ash Collection		X	X	X		
If originally designed for oil-firing, was there any design consideration for future coal-firing such as space for pulverizers, coal piping, electrostatic precipitators, etc.			No	No	No		
Boiler Manufacturer			B & W	B & W	B & W		
Unit's Capacity Factor			.45	.93	.75		

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: The above figures are representative of the years 1978-79 and 1980.

The above information was supplied by:

Name: P.E. Pecseaque Position: Unit Operator Telephone: (506)693-2451

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.1: UTILITY OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Newfoundland & Labrador Hydro

Postal Address: P.O. Box 9100
St. Johns, Nfld.
A1A 2X8

Name of Plant: Holyrood Generating Station

Postal Address: P.O. Box 29
Holyrood, Nfld.
A0A 2R0

Please enter data or check as appropriate:

250

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1970	1971	1980			
Design Capacity (lb/hr)		1,050,000	1,050,000	1,072,200			
Steam Conditions	Press. PSIG	1900	1900	1890			
	Temp. °F	1005	1005	1005			
Actual Pounds of Steam Generated in One Year[1]		3,687,553,100	3,010,622,300	2,685,453,400			
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	27,013,645	23,951,100	19,672,625			
	1982(Projected)	43,715,700	43,715,700	43,715,700			
	Beyond '82 (Projected)	52,460,000	52,460,000	52,460,000			
Please Specify Type of Oil Used		No. 6	No. 6	No. 6			
Boiler Originally Designed for	Coal - Firing						
	Oil - Firing	X	X	X			
No. of Oil Burners		12	12	9			
Furnace Heat Release Rate (Btu/cu ft./hr)		25M @ MCR	25M @ MCR	25M @ MCR			
Check Appropriate Furnace Bottom Hopper Arrangement	Sloped with Ash Collection						
	Low Slope/Flat Without Ash Collection	X	X	X			
If originally designed for oil-firing, was there any design consideration for future coal-firing such as space for pulverizers, coal piping, electrostatic precipitators, etc.		No	No	No			
Boiler Manufacturer		CE	CE	B&W			
Unit's Capacity Factor		.40	.33	.29			

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: Furnace heat release for Unit 3 of 25,000 Btu/cu ft/hr is an approximation.

The above information was supplied by:

Name: Don Pardy Position: Operations Supervisor Telephone: (709)737-1340

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Belledune Fertilizer

Postal Address: P.O. Box 42
Belledune, N.B.
E0B 1G0

Name of Plant: Same

Postal Address:

Please enter data or check as appropriate:

300

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1967	1967				
Design Capacity (lb/hr)		85,000	85,000				
Steam Conditions	Press. PSIG	150	150				
	Temp. °F	366	366				
Actual Pounds of Steam Generated in One Year[1]		220×10^6	130×10^6				
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	1,540,000	910,000				
	1982(Projected)	1,500,000	1,000,000				
	Beyond '82 (Projected)	Same	Same				
Please Specify Type of Oil Used		No. 6	No. 6				
Estimated Boiler Efficiency (%)		80%	80%				
Boiler's Original Fuel Design and Type	Oil, Watertube	X	X				
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.		D	D				
Boiler Installation	Package	X	X				
	Field Erected						
Boiler Manufacturer		D.B.	D.B.				
Unit's Capacity Factor		.30	.17				

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments:

The above information was supplied by:

Name: Don Aikens Position: Plant Engineer Telephone: (506)522-5250

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Acadia Forest Products Ltd.

Postal Address: 1155 Dorchester Blvd. West
Suite 811
Montreal, Quebec

Name of Plant: Acadia Forest Products Ltd.

Postal Address: P.O. Box 280
Nelson-Miramichi, N.B.
E0C 1T0

Please enter data or check as appropriate:

305

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1964					
Design Capacity (lb/hr)		60,000					
Steam Conditions	Press. PSIG	185					
	Temp. °F	380					
Actual Pounds of Steam Generated in One Year[1]		11 x 10^6					
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	75,000					
	1982(Projected)	75,000					
	Beyond '82 (Projected)	75,000					
Please Specify Type of Oil Used		No. 6					
Estimated Boiler Efficiency (%)		70%*					
Boiler's Original Fuel Design and Type	Oil, Watertube	X					
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify	Hog fuel and refuse					
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.							
Boiler Installation	Package	X					
	Field Erected						
Boiler Manufacturer		CE					
Unit's Capacity Factor		.02					

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: _____

The above information was supplied by:

Name: R. Matchett Position: Project Engineer Telephone: (506)622-3520 Ext. 259

* Estimated by Monenco

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Atlantic Sugar Ltd

Postal Address: P.O. Box 2800
St. John, New Brunswick
E2L 4L4

Name of Plant:

Postal Address: Same

Please enter data or check as appropriate:

306

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1946	1946	1954			
Design Capacity (lb/hr)		60,000	60,000	80,000			
Steam Conditions	Press. PSIG	410	410	410			
	Temp. °F	580	580	675			
Actual Pounds of Steam Generated in One Year[1]		280 x 10^6*	280 x 10^6*	374.4 x 10^6*			
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	1,764,000*	1,764,000*	2,360,000*			
	1982(Projected)	Same	Same	Same			
	Beyond '82 (Projected)	Same	Same	Same			
Please Specify Type of Oil Used		No.6	No.6	No.6			
Estimated Boiler Efficiency (%)		87%	87%	87%			
Boiler's Original Fuel Design and Type	Oil, Watertube			X			
	Oil, Firetube						
	Coal, Stoker	X	X				
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.				D			
Boiler Installation	Package						
	Field Erected	X	X	X			
Boiler Manufacturer		B&W	B&W	CE			
Unit's Capacity Factor		.53	.53	.53			

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: The boilers are generally operated at 75% of their rated capacity, 5 days/wk.

The above information was supplied by:

Name: J.D. Wheatley Position: Chief Eng. Telephone: (506) 693-2481

* Estimated by Monenco on the basis of 75% MCR and 260 days/year operating conditions.

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Produits du Gulf St. Laurent Ltee
Postal Address: P.O. Box 30
Caraquet, New Brunswick
EOB 1KO

Name of Plant: _____
Postal Address: Same

Please enter data or check as appropriate:

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1968					
Design Capacity (lb/hr)		24,000					
Steam Conditions	Press. PSIG	150					
	Temp. °F	367					
Actual Pounds of Steam Generated in One Year[1]		17.8 x 10^6*					
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	122,000					
	1982(Projected)	Same					
	Beyond '82 (Projected)	Same					
Please Specify Type of Oil Used		No.6					
Estimated Boiler Efficiency (%)		80%					
Boiler's Original Fuel Design and Type	Oil, Watertube						
	Oil, Firetube	X					
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.							
Boiler Installation	Package	X					
	Field Erected						
Boiler Manufacturer		Cleaver Brooks					
Unit's Capacity Factor		.08					

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: Boiler operation averages 2 days/week, 8 months/year - figures presented for the oil consumption rate are rough estimates

The above information was supplied by:

Name: Z. Sonier Position: Stationary Eng. Telephone: (506)727-5465

* Estimated by Monenco on the basis of oil consumption rate given.

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: St. John Shipbuilding and Dry Dock Co. Ltd.

Postal Address: P.O. Box 970, St. John, New Brunswick

Name of Plant: _____

Postal Address: Same

Please enter data or check as appropriate:

308

		1	2	3	4	5	6
Steam Generator Unit No.							
Year of First Commercial Operation		1966					
Design Capacity (lb/hr)		50,000					
Steam Conditions	Press. PSIG	150					
	Temp. °F	358					
Actual Pounds of Steam Generated in One Year[1]		112 x 10^6					
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	908,142					
	1982(Projected)	900,000					
	Beyond '82 (Projected)	1,000,000					
Please Specify Type of Oil Used		No.6					
Estimated Boiler Efficiency (%)		70%					
Boiler's Original Fuel Design and Type	Oil, Watertube	X					
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.		D					
Boiler Installation	Package	X					
	Field Erected						
Boiler Manufacturer		B&W					
Unit's Capacity Factor		.26					

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: The boilers were purchased from the Superior Sea Product of Yarmouth, Nova Scotia in 1975.

The above information was supplied by:

Name: W. Arabacky j Position: Plant Eng. Telephone: (506)693-9941

* Estimated by Monenco.

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Brunswick Mining and Smelting

Postal Address: P.O. Box 3000
Bathurst, New Brunswick
E2A 3Z8

Name of Plant: Mining Division

Postal Address: Same

Please enter data or check as appropriate:

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1969	1969	1974			
Design Capacity (lb/hr)		57,000	57,000	100,000			
Steam Conditions	Press. PSIG	135	135	135			
	Temp. °F	358	358	358			
Actual Pounds of Steam Generated in One Year[1]		220 x 10^6	220 x 10^6	440 x 10^6			
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	1,358,000	1,358,000	2,715,000			
	1982(Projected)	1,431,500	1,431,500	2,863,000			
	Beyond '82 (Projected)	1,305,750	1,305,750	2,611,500			
Please Specify Type of Oil Used		No.6	No.6	No.6			
Estimated Boiler Efficiency (%)		80%	80%	80%			
Boiler's Original Fuel Design and Type	Oil, Watertube	X	X	X			
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.		D	D	D			
Boiler Installation	Package	X	X	X			
	Field Erected						
Boiler Manufacturer		D.B.	D.B.	B&W			
Unit's Capacity Factor		.44	.44	.50			

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: Oil consumption figures for 1980 are actually those for 1981. A 3 month strike in 1980 made oil figures inaccurate and untypical.

The above information was supplied by:

Name: M. LaPlante Position: Mech. Eng. Telephone: (506)546-6671

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Moosehead Breweries Ltd.

Postal Address: P.O. Box 3100, "B"
Saint John, New Brunswick
E2M 3H2

Name of Plant: _____

Postal Address: _____

Please enter data or check as appropriate:

310

		1	2	3	4	5	6
Steam Generator Unit No.							
Year of First Commercial Operation				1970			
Design Capacity (lb/hr)				30,000			
Steam Conditions	Press. PSIG			100			
	Temp. °F			327			
Actual Pounds of Steam Generated in One Year[1]				31.4×10^6			
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980			225,000			
	1982(Projected)			247,500			
	Beyond '82 (Projected)			N/K			
Please Specify Type of Oil Used				No.6			
Estimated Boiler Efficiency (%)				75%			
Boiler's Original Fuel Design and Type	Oil, Watertube			X			
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.				D			
Boiler Installation	Package			X			
	Field Erected						
Boiler Manufacturer				FW			
Unit's Capacity Factor				.12			

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: Unable to provide accurate figures as a recent boiler failure destroyed the records.
The figures presented are only estimates.

The above information was supplied by:

Name: W. Baird Position: Chief Operator Telephone: (506)672-7000

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Fraser Inc.

Postal Address: Atholville, New Brunswick
EOK 1AO

Name of Plant:

Postal Address: Same

Please enter data or check as appropriate:

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1955	1955				
Design Capacity (lb/hr)		135,000	135,000				
Steam Conditions	Press. PSIG	700	700				
	Temp. °F	730	730				
Actual Pounds of Steam Generated In One Year[1]		957.8 x 10^6	983.5 x 10^6				
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	6,979,863	7,166,183				
	1982(Projected)	5,844,000	6,000,000				
	Beyond '82 (Projected)	1,168,800	1,200,000				
Please Specify Type of Oil Used		No.6	No.6				
Estimated Boiler Efficiency (%)		85%	85%				
Boiler's Original Fuel Design and Type	Oil, Watertube	X	X				
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.		Riley Rx	Riley Rx				
Boiler Installation	Package						
	Field Erected	X	X				
Boiler Manufacturer		FW	FW				
Unit's Capacity Factor		.81	.83				

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: The plant is presently into an expansion program which will be completed in the fall of 1983. At that time we will be 15% to 20% dependent on our present oil supply usage.

The above information was supplied by:

Name: T. Doyle Position: Steam Plant Supt. Telephone: (506)753-4491

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Saint John Regional Hospital

Postal Address: P.O. Box 2100
Saint John, New Brunswick
E2L 4L2

Name of Plant: _____

Postal Address: _____

Please enter data or check as appropriate:

312

		1	2	3	4	5	6
Steam Generator Unit No.		1	2	3			
Year of First Commercial Operation		1983	1983	1983			
Design Capacity (lb/hr)		25,000	25,000	25,000			
Steam Conditions	Press. PSIG	125	125	125			
	Temp. °F	353	353	353			
Actual Pounds of Steam Generated in One Year		36.3×10^6	36.3×10^6	36.3×10^6			
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	-	-	-			
	1982(Projected)	-	-	-			
	Beyond '82 (Projected)	250,000	250,000	250,000			
Please Specify Type of Oil Used		No.6	No.6	No.6			
Estimated Boiler Efficiency (%)		78%	78%	78%			
Boiler's Original Fuel Design and Type	Oil, Watertube						
	Oil, Firetube	X	X	X			
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.							
Boiler Installation	Package	X	X	X			
	Field Erected						
Boiler Manufacturer		Cleaver Brooks	Cleaver Brooks	Cleaver Brooks			
Unit's Capacity Factor		.17	.17	.17			

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: Presented figures are only estimates since no actual records have been obtained yet.

The above information was supplied by:

Name: D. Jameson Position: Plant Supt. Telephone: (506)642-5061

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: University of Moncton

Postal Address: Moncton, New Brunswick
E1A 3E9

Name of Plant: Same

Postal Address:

Please enter data or check as appropriate:

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1965	1965				
Design Capacity (lb/hr)		50,000	50,000				
Steam Conditions	Press. PSIG	200	200				
	Temp. °F	380	380				
Actual Pounds of Steam Generated In One Year		89.6 x 10^6	80.4 x 10^6				
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	452,580	453,930				
	1982(Projected)	455,000	455,000				
	Beyond '82 (Projected)	Same	Same				
Please Specify Type of Oil Used		No.6	No.6				
Estimated Boiler Efficiency (%)		85%	85%				
Boiler's Original Fuel Design and Type	Oil, Watertube	X	X				
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.		O	O				
Boiler Installation	Package	X	X				
	Field Erected						
Boiler Manufacturer		J. Inglis	J. Inglis				
Unit's Capacity Factor		.20	.20				

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments:

The above information was supplied by:

Name: J.A. LeBlanc Position: Chief Stationary Eng. Telephone: (506)858-4211

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.7: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Mount Allison University

Postal Address: P.O. Box 1230
Sackville, New Brunswick
E0A 3C0

Name of Plant: Heating Plant

Postal Address: Same

Please enter data or check as appropriate:

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1964	1959	1957			
Design Capacity (lb/hr)		35,000	35,000	20,000			
Steam Conditions	Press. PSIG	100	100	100			
	Temp. °F	338	338	338			
Actual Pounds of Steam Generated in One Year[1]		35.1 x 10⁶	35.1 x 10⁶	45.8 x 10⁶			
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	226,120*	226,120*	295,260*			
	1982(Projected)	220,000*	220,000*	260,000*			
	Beyond '82 (Projected)	204,000*	204,000*	242,000*			
Please Specify Type of Oil Used		No.6	No.6	No.6			
Estimated Boiler Efficiency (%)		85%	85%	85%			
Boiler's Original Fuel Design and Type	Oil, Watertube	X	X	X			
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.		D	D	A			
Boiler Installation	Package	X	X	X			
	Field Erected						
Boiler Manufacturer		D.B.	D.B.	F.W.			
Unit's Capacity Factor		.11	.11	.26			

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: _____

The above information was supplied by:

Name: Harold Chapman Position: Chief Eng. Telephone: (506)536-2040 Ext. 349

* Estimated by Monenco on the basis of the steam rating.

NOTE: In actual practice, only one unit (No. 1 or No. 2) is operated along with Unit No. 3. Each unit is operated every other year. The actual steam and oil consumption ratings were broken in half to account for both units in this survey.

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Moncton Hospital

Postal Address: 135 MacBeath Avenue
Moncton, New Brunswick
E1C 6Z8

Name of Plant: _____

Postal Address: _____

Please enter data or check as appropriate:

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1969	1960				
Design Capacity (lb/hr)		30,000	25,000				
Steam Conditions	Press. PSIG	120	120				
	Temp. °F	350	350				
Actual Pounds of Steam Generated In One Year		56.4 x 10⁶*	14.1 x 10⁶*				
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	459,500*	114,900*				
	1982(Projected)	400,000*	100,000*				
	Beyond '82 (Projected)	640,000*	160,000*				
Please Specify Type of Oil Used		No.6	No.6				
Estimated Boiler Efficiency (%)		80%*	80%*				
Boiler's Original Fuel Design and Type	Oil, Watertube	X	X				
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.		D	O				
Boiler Installation	Package	X	X				
	Field Erected						
Boiler Manufacturer		B&W	Inglis				
Unit's Capacity Factor		.21	.06				

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: _____

The above information was supplied by:

Name: Warren Branscomb Position: Chief Eng. Telephone: (506)855-1600

* Estimated by Monenco on the basis of Owner's information.

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Solicitor General

Postal Address: Government of Canada

Name of Plant: Dorchester Penitentiary

Postal Address: Drawer A or B
Dorchester, New Brunswick
E0A 1M0

Please enter data or check as appropriate:

316

		1	2	3	4	5	6
Steam Generator Unit No.							
Year of First Commercial Operation		1946	1950	1954			
Design Capacity (lb/hr)		25,000	20,000	30,000			
Steam Conditions	Press. PSIG	125	125	125			
	Temp. °F	453	453	453			
Actual Pounds of Steam Generated in One Year[1]		30.2×10^6	38.3×10^6	47.6×10^6			
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	208,000	264,000	328,000			
	1982(Projected)	Same	Same	Same			
	Beyond '82 (Projected)	Same	Same	Same			
Please Specify Type of Oil Used		No.6	No.6	No.6			
Estimated Boiler Efficiency (%)		78%	78%	78%			
Boiler's Original Fuel Design and Type	Oil, Watertube						
	Oil, Firetube						
	Coal, Stoker	X	X	X			
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.							
Boiler Installation	Package						
	Field Erected	X	X	X			
Boiler Manufacturer		F.W.	F.W.	F.W.			
Unit's Capacity Factor		.14	.22	.18			

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: Approximate figures.

The above information was supplied by:

Name: D.M. Lauder Position: Engineering Supervisor Telephone: (506)379-2423 Ext. 220

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: University of New Brunswick
Postal Address: P.O. Box 4400
College Hill Road
Fredericton, New Brunswick

Name of Plant: UNB Heating Plant
Postal Address: Same

Please enter data or check as appropriate:

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1971	1971				
Design Capacity (lb/hr)		120,000	120,000				
Steam Conditions	Press. PSIG	250	250				
	Temp. °F	404	404				
Actual Pounds of Steam Generated in One Year[1]		200.2 x 10^6	200.2 x 10^6				
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	1,258,180	1,258,180				
	1982(Projected)	1,250,000	1,250,000				
	Beyond '82 (Projected)	Same	Same				
Please Specify Type of Oil Used		No.6	No.6				
Estimated Boiler Efficiency (%)		82%	82%				
Boiler's Original Fuel Design and Type	Oil, Watertube	X	X				
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.		D	D				
Boiler Installation	Package	X	X				
	Field Erected						
Boiler Manufacturer		F.W.	F.W.				
Unit's Capacity Factor		.19	.19				

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: Normal operation employs one boiler as primary and the other as back up. The situation is reversed periodically so that both boilers operate about the same.

The above information was supplied by:

Name: John Whelpley Position: Chief Eng. Stm. Plant Telephone: (506)453-4722

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Lebatts N.B. Brewery
Postal Address: Box 3070, Station B
St. John, New Brunswick

Name of Plant: Olands Brewery Limited
Postal Address: Box 3070, Station B
St. John, New Brunswick

Please enter data or check as appropriate:

318

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1977					
Design Capacity (lb/hr)		30,000					
Steam Conditions	Press. PSIG	125					
	Temp. °F	353					
Actual Pounds of Steam Generated in One Year[1]		58.7 x 10⁶					
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	385,400*					
	1982(Projected)	404,700*					
	Beyond '82 (Projected)	425,000*					
Please Specify Type of Oil Used		No.6					
Estimated Boiler Efficiency (%)		83.5%					
Boiler's Original Fuel Design and Type	Oil, Watertube	X					
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.		D					
Boiler Installation	Package	X					
	Field Erected						
Boiler Manufacturer		Cleaver Brooks					
Unit's Capacity Factor		.22					

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: The annual projected increase in sales is about 5%. This is reflected on the annual oil consumption rate projections.

The above information was supplied by:

Name: James Keith Position: Chief Eng. Telephone: (506)672-5050

* Estimated by Monenco on the basis of the steam rating.

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: National Sea Products Ltd.

Postal Address: P.O. Box 2130
Halifax, Nova Scotia

Name of Plant: Shipping Division

Postal Address: P.O. Box 130
Shippegan, New Brunswick

Please enter data or check as appropriate:

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1966	1969				
Design Capacity (lb/hr)		24,150	24,150				
Steam Conditions	Press. PSIG	100	100				
	Temp. °F	338	338				
Actual Pounds of Steam Generated in One Year[1]		24.1 x 10^6*	24.1 x 10^6*				
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	155,000	157,000				
	1982(Projected)	165,000	165,000				
	Beyond '82 (Projected)	Same	Same				
Please Specify Type of Oil Used		No.6	No.6				
Estimated Boiler Efficiency (%)		80%	80%				
Boiler's Original Fuel Design and Type	Oil, Watertube						
	Oil, Firetube	X	X				
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.							
Boiler Installation	Package	X	X				
	Field Erected						
Boiler Manufacturer		Cleaver Brooks	Cleaver Brooks				
Unit's Capacity Factor		.11	.11				

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: No steam flow meters installed.

The above information was supplied by:

Name: Alphonse Finn Position: Manager Telephone: (506)336-2360

* Estimated by Monenco on the basis of oil consumption projects for 1982.

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Consolidated Bathurst

Postal Address: P.O. Box 69
Montreal, Quebec
H3C 2R5

Name of Plant: Bathurst Division

Postal Address: 891 Main Street
Bathurst, New Brunswick
E2A 4A3

Please enter data or check as appropriate:

320

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation				1945	1958	1974	
Design Capacity (lb/hr)				175,000	118,000	90,000	
Steam Conditions	Press. PSIG			640	1,250	175	
	Temp. °F			730	850	380	
Actual Pounds of Steam Generated in One Year[1]				831.6 x 10^6	445.2 x 10^6	65 x 10^6	
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980			6,133,960	2,925,870	453,370	
	1982(Projected)			6,160,000	2,925,870	439,950	
	Beyond '82 (Projected)			4,399,470	2,860,000	660,000	
Please Specify Type of Oil Used				No.6	No.6	No.6	
Estimated Boiler Efficiency (%)				83%	83%	80%	
Boiler's Original Fuel Design and Type	Oil, Watertube				X	X	
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized			X			
	Other, Specify				Black Liquor		
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.						D	
Boiler Installation	Package					X	
	Field Erected			X	X		
Boiler Manufacturer				B&W	B&W	F.W.	
Unit's Capacity Factor				.54	.43	.15	

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: _____

The above information was supplied by:

Name: M. Steeves Position: Plant Eng. Telephone: (506)546-3361

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: CIP Inc.

Postal Address: 1155 Metcalf
Montreal, Quebec
H3B 2X1

Name of Plant: NBIP Ltd.

Postal Address: Box 1450
Dalhousie, New Brunswick
E0K 1B0

Please enter data or check as appropriate:

321

		5	6	7	4	5	6
Steam Generator Unit No.							
Year of First Commercial Operation		1956	1969	1982			
Design Capacity (lb/hr)		200,000	300,000	300,000			
Steam Conditions	Press. PSIG	450	450	450			
	Temp. °F	650	650	650			
Actual Pounds of Steam Generated in One Year[1]		711.6 x 10^6	1459.7 x 10^6	1270.6 x 10^6*			
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	5,359,400	10,725,800	-			
	1982(Projected)	EXPANSION PROG. IN PROGRESS					
	Beyond '82 (Projected)	Same	Same	7,914,800*			
Please Specify Type of Oil Used		No.6	No.6	No.6			
Estimated Boiler Efficiency (%)		82%	84%	88%			
Boiler's Original Fuel Design and Type	Oil, Watertube		X	X			
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized	X					
	Other, Specify			Hog			
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.		VU	D	D			
Boiler Installation	Package						
	Field Erected	X	X	X			
Boiler Manufacturer		CE	B&W	CE			
Unit's Capacity Factor		.41	.56	.48			

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: Our actual steam generation of 350,000 lb/hr will be brought up to 470,000 lb/hr after the expansion program has been completed.

The above information was supplied by:

Name: Rene Tremblay Position: Steam Plant Eng. Telephone: (506)684-5209

* Estimated by Monenco on the basis of information provided on the Company's expansion program.

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Parsons and Whitmore

Postal Address: 200 Park Avenue
New York, New York
10166 USA

Name of Plant: St. Anne Nackawic Pulp and Paper

Postal Address: P.O. Box 1000
Nackawic, New Brunswick
E0H 1P0

Please enter data or check as appropriate:

322

		1	2	3	4	5	6
Steam Generator Unit No.							
Year of First Commercial Operation		1970					
Design Capacity (lb/hr)		400,000					
Steam Conditions	Press. PSIG	900					
	Temp. °F	725					
Actual Pounds of Steam Generated in One Year[1]		$2,520 \times 10^6$					
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	14,280,000					
	1982(Projected)	13,500,000					
	Beyond '82 (Projected)	N/A					
Please Specify Type of Oil Used		No.6					
Estimated Boiler Efficiency (%)		72%					
Boiler's Original Fuel Design and Type	Oil, Watertube	X					
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify	Bark					
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.		O					
Boiler Installation	Package						
	Field Erected	X					
Boiler Manufacturer		B & W					
Unit's Capacity Factor		.72					

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: _____

The above information was supplied by:

Name: Jean L. Pellerin Position: Steam and Recovery Supr. Telephone: (506)575-2221

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Fraser Inc.

Postal Address: 27 Rice Street
Edmundston, New Brunswick
E3V 1S9

Name of Plant: _____

Postal Address: _____

Please enter data or check as appropriate:

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1945		1958	1976	1979	
Design Capacity (lb/hr)		100,000		220,000	150,000	168,000	
Steam Conditions	Press. PSIG	600		1,250	600	1,250	
	Temp. °F	700		900	750	950	
Actual Pounds of Steam Generated in One Year[1]		155.3×10^6		523.6×10^6	821.2×10^6	$2,209 \times 10^6$	
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	988,099		3,539,651	4,474,298	4,514,150	
	1982(Projected)	760,840		2,725,530	3,445,200	3,476,000	
	Beyond '82 (Projected)	1,194,520		4,279,100	5,409,000	5,457,300	
Please Specify Type of Oil Used		No.6		No.6	No.6	No.6	
Estimated Boiler Efficiency (%)							
Boiler's Original Fuel Design and Type	Oil, Watertube				X	X	
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized	X		X			
	Other, Specify				Bark	Liquor	
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.		VU		VU			
Boiler Installation	Package						
	Field Erected	X		X	X	X	
Boiler Manufacturer		CE		CE	F.W.	B&W	
Unit's Capacity Factor		.18		.27	.53	.20	

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: _____

The above information was supplied by:

Name: J.A. Heley Position: Gen. Supt. Steam and Recovery Telephone: (506)735-5551 Ext. 292

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Kimberly-Clark of Canada
Postal Address: P.O. Box 3130, Station "B"
St. John, New Brunswick
E2M 4X7

Name of Plant: _____
Postal Address: _____

Please enter data or check as appropriate:

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1967					
Design Capacity (lb/hr)		50,000					
Steam Conditions	Press. PSIG	220					
	Temp. °F	395					
Actual Pounds of Steam Generated in One Year[1]		145.8 x 10⁶*					
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	940,000					
	1982(Projected)	Same					
	Beyond '82 (Projected)	Same					
Please Specify Type of Oil Used		No.6					
Estimated Boiler Efficiency (%)		85%					
Boiler's Original Fuel Design and Type	Oil, Watertube	X					
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.		D					
Boiler Installation	Package	X					
	Field Erected						
Boiler Manufacturer		B&W					
Unit's Capacity Factor		.33					

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: _____

The above information was supplied by:

Name: A. Davenport Position: Chief Eng. Telephone: (506)672-4660

* Estimated by Monenco on the basis of oil consumption rate.

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: McCain Foods Limited

Postal Address: R.R #6
Grand Falls, New Brunswick
E0J 1M0

Name of Plant:

Postal Address: Same

Please enter data or check as appropriate:

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1969	1965	1969			
Design Capacity (lb/hr)		35,000	40,000	35,000			
Steam Conditions	Press. PSIG	300	300	300			
	Temp. °F	420	420	420			
Actual Pounds of Steam Generated in One Year[1]		90.2 x 10^6*	102.2 x 10^6*	90.2 x 10^6*			
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	618,000	700,000	618,000			
	1982(Projected)	610,000	698,000	610,000			
	Beyond '82 (Projected)	580,000	663,000	580,000			
Please Specify Type of Oil Used		No.6	No.6	No.6			
Estimated Boiler Efficiency (%)		80%	80%	80%			
Boiler's Original Fuel Design and Type	Oil, Watertube	X	X	X			
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.		D	D	D			
Boiler Installation	Package	X	X	X			
	Field Erected						
Boiler Manufacturer		F.W.	Cleaver Brooks	F.W.			
Unit's Capacity Factor		.29	.29	.29			

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: Projected oil consumption rate reduced because of ongoing energy conservation policy.

The above information was supplied by:

Name: John Corey Position: Engineer Telephone: (506) 473-7641

* Estimated by Monenco on the basis of oil consumption rates.

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: McCain Foods Limited

Postal Address: Florenceville, N.B.
E0J 1K0

Name of Plant:

Postal Address: Same

Please enter data or check as appropriate:

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation			1963	1965	1972		
Design Capacity (lb/hr)			33,000	60,000	60,000		
Steam Conditions	Press. PSIG		300	300	125		
	Temp. °F		420	420	353		
Actual Pounds of Steam Generated in One Year[1]			105.8 x 10⁶[a]	192.6 x 10⁶[a]	192.6 x 10⁶[a]		
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980		725,000	1,320,000	1,320,000		
	1982(Projected)		690,000	1,250,000	1,250,000		
	Beyond '82 (Projected)		620,000	1,125,000	1,125,000		
Please Specify Type of Oil Used			No.6	No.6	No.6		
Estimated Boiler Efficiency (%)			80%	80%	80%		
Boiler's Original Fuel Design and Type	Oil, Watertube		X	X	X		
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.			D	D	D		
Boiler Installation	Package		X	X	X		
	Field Erected						
Boiler Manufacturer			B & W	B & W	F.W.		
Unit's Capacity Factor			.37	.37	.37		

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments:

The above information was supplied by:

Name: John Corey Position: Engineer Telephone: (506)392-5541

[a] Estimated by Monenco on the basis of oil consumption rates.

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Lake Utopia Paper Limited

Postal Address: P.O. Box 269
St. George, N.B.
E0G 2Y0

Name of Plant: _____

Postal Address: _____

Please enter data or check as appropriate:

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1970	1970	1953			
Design Capacity (lb/hr)		50,000	50,000	100,000			
Steam Conditions	Press. PSIG	200	200	200			
	Temp. °F	387	387	387			
Actual Pounds of Steam Generated in One Year[1]		206.9 x 10^6*	206.9 x 10^6*	413.8 x 10^6*			
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	1.35 x 10^6	1.35 x 10^6	2.7 x 10^6			
	1982(Projected)	Same	Same	Same			
	Beyond '82 (Projected)	Same	Same	Same			
Please Specify Type of Oil Used		No.6	No.6	No.6			
Estimated Boiler Efficiency (%)		84%	84%	84%			
Boiler's Original Fuel Design and Type	Oil, Watertube	X	X	X			
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.		D	D	D			
Boiler Installation	Package	X	X	X			
	Field Erected						
Boiler Manufacturer		B & W	B & W	B & W			
Unit's Capacity Factor		.47	.47	.47			

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: No.3 boiler was fabricated in 1953 and was purchased secondhand in the U.S. and put to operation in 1973.

The above information was supplied by:

Name: Dale Hennigar Position: Steam Plant Supt. Telephone: (506)[illegible]

* Estimated by Monenco on the basis of oil consumption rates.

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Cavendish Farms

Postal Address: Box 3500
Summerside, Prince Edward Island
C1N 5J5

Name of Plant:

Postal Address: Same

328

Please enter data or check as appropriate:

		1	2	3	4	5	6
Steam Generator Unit No.							
Year of First Commercial Operation		1977	1973				
Design Capacity (lb/hr)		115,000	42,000				
Steam Conditions	Press. PSIG	280	290				
	Temp. °F	500	480				
Actual Pounds of Steam Generated in One Year[1]		191.5 x 10^6a	11.3 x 10^6a				
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	1,214,665	72,627				
	1982(Projected)	954,550	56,150				
	Beyond '82 (Projected)	997,900	58,700				
Please Specify Type of Oil Used		No.6	No.6				
Estimated Boiler Efficiency (%)		85%	85%				
Boiler's Original Fuel Design and Type	Oil, Watertube	X	X				
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.		D	D				
Boiler Installation	Package	X	X				
	Field Erected						
Boiler Manufacturer		Zurn	B & W				
Unit's Capacity Factor		.19	.03				

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments:

The above information was supplied by:

Name: Keith Silliker Position: Chief Boiler and Refrigeration Eng. Telephone: (902) 436-9206

a Estimated by Monenco on the basis of oil consumption rates.

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE III - CANADA

Name of Company: Connors Brothers

Postal Address: Blacks Harbour, N.B.
E0G 1H0

Name of Plant: Sardine Plant

Postal Address: Blacks Harbor
Charlotte County, N.B.

Please enter data or check as appropriate:

329

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1975	1975				
Design Capacity (lb/hr)		80,000	80,000				
Steam Conditions	Press. PSIG	175	175				
	Temp. °F	400	400				
Actual Pounds of Steam Generated in One Year[1]		23.9×10^{6} lbs	23.9×10^{6} lbs				
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	160,000	160,000				
	1982(Projected)	125,000	125,000				
	Beyond '82 (Projected)	125,000	125,000				
Please Specify Type of Oil Used		No.6	No. 6				
Estimated Boiler Efficiency (%)		82%	82%				
Boiler's Original Fuel Design and Type	Oil, Watertube	X	X				
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.		D	D				
Boiler Installation	Package	X	X				
	Field Erected						
Boiler Manufacturer		F.W.	F.W.				
Unit's Capacity Factor		.09	.09				

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: It is common practice to alternate units every 3 or 4 months. The reason for reduced oil consumption figures for '82 or beyond is the Company's near term plans for energy conservation.

The above information was supplied by:

Name: B. Stevens Position: Energy Coordinator Telephone: (506)456-3301

* Estimated by Monenco on the basis of annual oil consumption rates.

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE III - CANADA

Name of Company: Connors Brothers

Postal Address: Blacks Harbour, N.B.
E0G 1H0

Name of Plant: No. 3 Pulp Mill Plant

Postal Address: same

Please enter data or check as appropriate:

330

		1	2	3	4	5	6
Steam Generator Unit No.							
Year of First Commercial Operation		1976					
Design Capacity (lb/hr)		35,000					
Steam Conditions	Press. PSIG	125					
	Temp. °F	353					
Actual Pounds of Steam Generated in One Year[1]		52.1 x 10^{6a}					
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	350,000					
	1982(Projected)	350,000					
	Beyond '82 (Projected)	Same					
Please Specify Type of Oil Used		No.6					
Estimated Boiler Efficiency (%)		82%					
Boiler's Original Fuel Design and Type	Oil, Watertube	X					
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.		D					
Boiler Installation	Package	X					
	Field Erected						
Boiler Manufacturer		Volcano					
Unit's Capacity Factor		.17					

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: Boiler operates from 5,000 to 20,000 per yr. depending on the load, approximately 10 hrs/day, 5 days/wk. (Information collected on the telephone.)

The above information was supplied by:

Name: B. Stevens Position: Energy Coordinator Telephone: (506)456-3301

[a] Estimated by Monenco on the basis of annual oil consumption rate.

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

USS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Boise Cascade Canada Ltd.

Postal Address: P.O. Box 1020
Newcastle, New Brunswick
E1V 3M8

Name of Plant:

Postal Address: Same

Please enter data or check as appropriate:

331

		1	2	3	4	5	6
Steam Generator Unit No.							
Year of First Commercial Operation				1972			
Design Capacity (lb/hr)				290,000			
Steam Conditions	Press. PSIG			625			
	Temp. °F			750			
Actual Pounds of Steam Generated in One Year[1]				1,040 x 10^6*			
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980			6,952,330			
	1982(Projected)			5,084,270			
	Beyond '82 (Projected)			3,300,000			
Please Specify Type of Oil Used				No.6			
Estimated Boiler Efficiency (%)				82%			
Boiler's Original Fuel Design and Type	Oil, Watertube						
	Oil, Firetube						
	Coal, Stoker			X			
	Coal, Pulverized						
	Other, Specify			Kraft Liquor			
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.							
Boiler Installation	Package						
	Field Erected			X			
Boiler Manufacturer				B&W Originally CE Now			
Unit's Capacity Factor				.41			

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: This boiler was originally a B&W recovery unit. It was retired from liquor burning in 1978 and was converted to a log fired C.E. travelling grate unit with bunker C oil as back up. The unit burns little or no oil during summer and produces 50% of its steam during winter from hog fuel.

The above information was supplied by:

Name: B.F. Morgan Position: Steam Recovery Supt. Telephone: (506)622-2250

* Estimated by Monenco on the basis of oil consumption rate in 1980.

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Wabush Mines Ltd.

Postal Address: P.O. Box 1800
Wabush, Labrador, Nfld.
A0R 1B0

Name of Plant: Same

Postal Address:

Please enter data or check as appropriate:

200

		1	2	3	4	5	6
Steam Generator Unit No.							
Year of First Commercial Operation		1962	1962				
Design Capacity (lb/hr)		100,000	100,000				
Steam Conditions	Press. PSIG	200	200				
	Temp. °F	380	380				
Actual Pounds of Steam Generated in One Year[1]		40 x 10^6	30 x 10^6				
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	135,000	135,000				
	1982(Projected)	130,000	130,000				
	Beyond '82 (Projected)	100,000	100,000				
Please Specify Type of Oil Used		No. 6	No. 6				
Estimated Boiler Efficiency (%)		80%	80%				
Boiler's Original Fuel Design and Type	Oil, Watertube	X	X				
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify	WR/OIL					
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.							
Boiler Installation	Package						
	Field Erected	X	X				
Boiler Manufacturer		D.B.	D.B.				
Unit's Capacity Factor		.03	.03				

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments:

The above information was supplied by:

Name: H. Hiscock Position: Chief Power Engineer Telephone: (709)282-3261

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ.3440-1-9080
TASK A2.2: INDUSTRIAL O.L-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Abitibi Price Inc. Name of Plant: Same

Postal Address: Stephenville Division Postal Address:

P.O. Box 40

Stephenville, Nfld. A2N 2Y8

Please enter data or check as appropriate:

231

		1	2	3	4	5	6
Steam Generator Unit No.							
Year of First Commercial Operation		1981					
Design Capacity (lb/hr)		450,000					
Steam Conditions	Press. PSIG	600					
	Temp. °F	700					
Actual Pounds of Steam Generated in One Year[1]		1,245.4x10⁶*					
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	Not operating					
	1982(Projected)	8,400,000					
	Beyond '82 (Projected)	7,560,000					
Please Specify Type of Oil Used		No. 6					
Estimated Boiler Efficiency (%)		77%					
Boiler's Original Fuel Design and Type	Oil, Watertube	X					
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify	and Bark					
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type B, etc.							
Boiler Installation	Package						
	Field Erected	X					
Boiler Manufacturer		B&W					
Unit's Capacity Factor		.25					

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments:

The above information was supplied by:

Name: A. Gibbons Position: Steam Plant Supt. Telephone: ( )643-5167

* Estimated by Monenco for the full year on the basis of owner's figure for 9 months' operation period.

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Abitibi Price Inc. Name of Plant: Same

Postal Address: Grand Falls, Nfld. Postal Address:

A2A 2K1

Please enter data or check as appropriate:

2 of 2

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1931	1931	1931	1958		
Design Capacity (lb/hr)		140,000	140,000	140,000	250,000		
Steam Conditions	Press. PSIG	450	450	450	450		
	Temp. °F	650	650	650	650		
Actual Pounds of Steam Generated in One Year[1]		428.4 x 10^6	428.4 x 10^6	428.4 x 10^6	1,234.8x10^6		
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	2,340,600*	2,340,600*	2,340,600*	6,746,300*		
	1982(Projected)	2,269,970*	2,269,970*	2,269,970*	6,542,830*		
	Beyond '82 (Projected)	Same	Same	Same	Same		
Please Specify Type of Oil Used		No. 6	No. 6	No. 6	No. 6		
Estimated Boiler Efficiency (%)		82%	82%	82%	85%		
Boiler's Original Fuel Design and Type	Oil, Watertube				X		
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized	X	X	X			
	Other, Specify				Bark & Oil		
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.							
Boiler Installation	Package						
	Field Erected	X	X	X	X		
Boiler Manufacturer		F.W.	F.W.	F.W.	F.W.		
Unit's Capacity Factor		.35	.35	.35	.38		

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: The first three units were changed over from coal to oil burning in 1949. Boiler No. 4 is designed to burn bark and oil and can be changed to used coal.

The above information was supplied by:

Name: H.B. Levallient Position: Steam Plant Supt. Telephone: (709)489-2241

* Estimated by Monenco on the basis of each unit's annual steam generation ratio over the total rating.

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Ultramar Canada Inc.
Postal Address: Holyrood
Conception Bay, Nfld.
A0A 2R0

Name of Plant: Same
Postal Address:

Please enter data or check as appropriate:

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1961					
Design Capacity (lb/hr)		47,000					
Steam Conditions	Press. PSIG	175					
	Temp. °F	375					
Actual Pounds of Steam Generated in One Year[1]		220 x 10⁶					
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	1,425,000					
	1982(Projected)	1,310,950					
	Beyond '82 (Projected)	1,275,550					
Please Specify Type of Oil Used		No. 6					
Estimated Boiler Efficiency (%)		78%					
Boiler's Original Fuel Design and Type	Oil, Watertube	X					
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify	Ref. Gas					
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.		O					
Boiler Installation	Package	X					
	Field Erected						
Boiler Manufacturer		J. Inglis					
Unit's Capacity Factor		.41					

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments:

The above information was supplied by:

Name: J. Edgecombe Position: Utilities & Energy Co-ord. Telephone: (709)229-3282

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Memorial University
Postal Address: Prince Philip Drive
St. John's, Newfoundland
A1C 5S7

Name of Plant: Utilities Annex
Postal Address:

Please enter data or check as appropriate:

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1974	1974	1974			
Design Capacity (lb/hr)		40,000	60,000	60,000			
Steam Conditions	Press. PSIG	175	175	175			
	Temp. °F	378	378	378			
Actual Pounds of Steam Generated in One Year[1]		108.5 x 10⁶*	112.3 x 10⁶*	77.8 x 10⁶*			
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	699,700*	724,210*	501,723*			
	1982(Projected)	629,730*	651,790*	451,550*			
	Beyond '82 (Projected)	Same	Same	Same			
Please Specify Type of Oil Used		No.6	No.6	No.6			
Estimated Boiler Efficiency (%)		85%	85%	85%			
Boiler's Original Fuel Design and Type	Oil, Watertube	X	X	X			
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.		D	D	D			
Boiler Installation	Package	X	X	X			
	Field Erected						
Boiler Manufacturer		Volcano	Volcano	Volcano			
Unit's Capacity Factor		.31	.21	.15			

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments:

The above information was supplied by:

Name: M. Dumford Position: Chief Power Eng. Telephone: (709)737-8706

* Estimated by Monenco on the basis of Owner's information.

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.2: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Dept. of Public Work and Services
Postal Address: Confederation Building
St. John's, Newfoundland

Name of Plant: Bldg. 904, Pleasantville
Postal Address:

Please enter data or check as appropriate:

210

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation			1982	1982			
Design Capacity (lb/hr)			20,700	20,700			
Steam Conditions	Press. PSIG		140	140			
	Temp. °F		361	361			
Actual Pounds of Steam Generated in One Year[1]			32.6 x 10⁶*	32.6 x 10⁶*			
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980		-	-			
	1982(Projected)		207,600*	207,600*			
	Beyond '82 (Projected)		Same	Same			
Please Specify Type of Oil Used			No.6	No.6			
Estimated Boiler Efficiency (%)			86.7%	86.2%			
Boiler's Original Fuel Design and Type	Oil, Watertube						
	Oil, Firetube		X	X			
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.							
Boiler Installation	Package		X	X			
	Field Erected						
Boiler Manufacturer			Volcano	Volcano			
Unit's Capacity Factor			.18	.18			

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments:

The above information was supplied by:

Name: J. Stamp Position: Operating Eng. Telephone: (709)737-2447

* Estimated by Monenco on the basis of some information supplied by the Owner.

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.1: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Bowater Newfoundland Limited

Postal Address: Mill Road
Cornerbrook, NFLD
A2H 6J4

Name of Plant:

Postal Address:

Please enter data or check as appropriate:

		1	2	3	4	5	6
Steam Generator Unit No.							
Year of First Commercial Operation		1940	1940	1947	1947	1947	1953
Design Capacity (lb/hr)		90,000	90,000	100,000	100,000	100,000	140,000
Steam Conditions	Press. PSIG	150	150	250	250	250	600
	Temp. °F	366	366	406	406	406	720
Actual Pounds of Steam Generated in One Year[1]		493.4 x 10^6*	493.4 x 10^6*	548.4 x 10^6*	548.6 x 10^6*	548.6 x 10^6*	767.7x10^6*
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	3,220,000*	3,220,000*	3,537,000*	3,537,000*	3,537,000*	3,644,000*
	1982(Projected)	same	same	same	same	same	same
	Beyond '82 (Projected)	2,400,000*	2,400,000*	2,634,000*	2,634,000*	2,634,000*	3,644,000*
Please Specify Type of Oil Used		No. 6	No. 6	No. 6	No. 6	No. 6	No. 6
Estimated Boiler Efficiency(%)		84%	84%	85%	85%	85%	86%
Boiler's Origianl Fuel Design and Type	Oil, Watertube						X
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized	X	X	X	X	X	
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.		A	A	A	A	A	A
Boiler Installation	Package						
	Field Erected	X	X	X	X	X	X
Boiler Manufacturer		F.W.	F.W.	F.W.	F.W.	F.W.	F.W.
Unit's Capacity Factor		.63	.63	.63	.63	.63	.63

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: Information collected by telephone.

The above information was supplied by:

Name: Mark Roberts Position: Steam Plant Sup't. Telephone: (709)634-5151

* Estimated by Monenco on the basis of information supplied by the Owner.

ASSESSMENT OF POTENTIAL COAL LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.3: INDUSTRIAL OIL-FIRED BOILERS

PHASE II - MARITIME PROVINCES

Name of Company: Iron Ore Co. of Canada

Postal Address: Labrador City,
Labrador, Nfld.

Name of Plant: Steam Plant

Postal Address:

Please enter data or check as appropriate:

220

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1972	1972				
Design Capacity (lb/hr)		125,000	125,000				
Steam Conditions	Press. PSIG	165	165				
	Temp. °F	374	374				
Actual Pounds of Steam Generated in One Year[1]		231,660,500	168,174,480				
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980[1]	1,511,905	1,107,945				
	1982(Projected)	1,260,500	1,260,500				
	Beyond '82 (Projected)	960,000	960,000				
Please Specify Type of Oil Used		No. 6	No. 6				
Estimated Boiler Efficiency (%)		85%	85%				
Boiler's Original Fuel Design and Type	Oil, Watertube	X	X				
	Oil, Firetube						
	Coal, Stoker						
	Coal, Pulverized						
	Other, Specify						
Manufacturer's Boiler Type Designation, i.e. Type A, Type O, Type D, etc.		D	D				
Boiler Installation	Package	X	X				
	Field Erected						
Boiler Manufacturer		F.W.	F.W.				
Boiler's Purchase Contract No.		.21	.15				

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments:

The above information was supplied by:

Name: Donkan Bell Position: Gen. Foreman Telephone: ( ) 944-8403

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.3: INDUSTRIAL OIL-FIRED PROCESS HEATERS AND COMBUSTORS

PHASE II - MARITIME PROVINCES

Name of Company: Brunswick Mining and Smelting

Postal Address: Belledune, New Brunswick
E0G 1G0

Name of Plant:

Postal Address:

Please enter data or check as appropriate:

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1966					
Design Capacity (Btu/hr)		55 x 10^6					
Actual Amount of Heat (Btu's) Generated in One Year[1]		55 x 10^9					
Estimated Efficiency of the Unit		60%					
Heater/Combustor Manufacturer		Peabody Combustion					
Unit's Capacity Factor		.11					
Application Process		SO_2 Gas Heating					
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	500,000					
	1982(Projected)	Same					
	Beyond '82 (Projected)	Same					
Please Specify Type of Oil Used		No.6					

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: Burner operates approximately 1000 hrs/yr. and no actual figures are available on fuel consumption rate.

The above information was supplied by:

Name: Ken Boudreau Position: Chief Designer Telephone: (506)522-2100

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.3: INDUSTRIAL OIL-FIRED PROCESS HEATERS AND COMBUSTORS

PHASE II - MARITIME PROVINCES

Name of Company: Belledune Fertilizer

Postal Address: P.O. Box 42
Belledune, New Brunswick
EOB 1GO

Name of Plant: _____

Postal Address: _____

Please enter data or check as appropriate:

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1967					
Design Capacity (Btu/hr)		50 x 10^6					
Actual Amount of Heat (Btu's) Generated in One Year[1]		112 x 10^9					
Estimated Efficiency of the Unit		65%*					
Heater/Combustor Manufacturer		CE					
Unit's Capacity Factor		.26					
Application Process		Fertilizer Drying					
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	720,000					
	1982(Projected)	800,000					
	Beyond '82 (Projected)	Same					
Please Specify Type of Oil Used		No.6					

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: _____

The above information was supplied by:

Name: Don Aikens Position: Plant Eng. Telephone: (506)522-5250

* Estimated by Monenco.

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.1: INDUSTRIAL OIL-FIRED PROCESS HEATERS AND COMBUSTORS

PHASE II - MARITIME PROVINCES

Name of Company: Canada Cement Lafarge Ltd.

Postal Address: P.O. Box 490 "B"
Montreal, Quebec
H3B 3K3

Name of Plant: Plant No. 2

Postal Address: R.R. #1
Havelock, New Brunswick
E0A 1W0

Please enter data or check as appropriate:

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1966					
Design Capacity (Btu/hr)		21 x 10^6					
Actual Amount of Heat (Btu's) Generated in One Year[1]		3.03 x 10^9*					
Estimated Efficiency of the Unit		65%					
Heater/Combustor Manufacturer		Bigelow Liptack					
Unit's Capacity Factor		.16					
Application Process		Raw Material Drying					
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1981	179,228					
	1982(Projected)	150,000					
	Beyond '82 (Projected)	180,000					
Please Specify Type of Oil Used		No.2					

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: Figures were not available for 1980. Plant did not operate year round in 1981 and outlook for 1982 is less promising.

The above information was supplied by:

Name: D.F. Smith Position: Process Eng. Telephone: ( )534-2301

* Estimated by Monenco on the basis of given oil consumption rates.

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.3: INDUSTRIAL OIL-FIRED PROCESS HEATERS AND COMBUSTORS

PHASE II - MARITIME PROVINCES

Name of Company: Havelock Processing Ltd.

Postal Address: P.O. Box 59
Havelock, N.B.
E0A 1W0

Name of Plant: _____

Postal Address: _____

Please enter data or check as appropriate:

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1971					
Design Capacity (Btu/hr)		50 x 10^6					
Actual Amount of Heat (Btu's) Generated in One Year[1]		412.03 x 10^9					
Estimated Efficiency of the Unit		N/A					
Heater/Combustor Manufacturer		Allis Chambers					
Unit's Capacity Factor		.94					
Application Process		Lime Kiln					
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	2,350,483					
	1982(Projected)	2,350,000					
	Beyond '82 (Projected)	2,500,000					
Please Specify Type of Oil Used		No. 6					

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: _____

The above information was supplied by:

Name: J.L. Murray Position: General Manager Telephone: ( )534-2311

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.4: INDUSTRIAL OIL-FIRED PROCESS HEATERS AND COMBUSTORS

PHASE II - MARITIME PROVINCES

Name of Company: Fishery Products Limited
Postal Address: Marystown Branch
Marystown, Nfld.

Name of Plant: Fishery Products Limited
Postal Address: P.O. Box 119
Marystown, Nfld.
A0E 2M0

Please enter data or check as appropriate:

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation			1967				
Design Capacity (Btu/hr)			25.1 x 10^6				
Actual Amount of Heat (Btu's) Generated in One Year[1]			53 x 10^9				
Estimated Efficiency of the Unit			86%				
Heater/Combustor Manufacturer			Cleaver Brooks				
Unit's Capacity Factor			.24				
Application Process			Heating and heat production				
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1981		442,000				
	1982(Projected)		445,000				
	Beyond '82 (Projected)		Same				
Please Specify Type of Oil Used			No. 6				

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: _____

The above information was supplied by:

Name: Carl Hooper Position: Chief Engineer Telephone: ( )279-1380

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.3: INDUSTRIAL OIL-FIRED PROCESS HEATERS AND COMBUSTORS

PHASE II - MARITIME PROVINCES

Name of Company: Wabush Mines
Postal Address: Wabush, Labrador, Nfld.

Name of Plant: Scully Mine
Postal Address:

Please enter data or check as appropriate:

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1964	1969	1964			
Design Capacity (Btu/hr)		70 x 10^6	100 x 10^6	70 x 10^6			
Actual Amount of Heat (Btu's) Generated in One Year[1]		3.14 x 10^{11}	5.45 x 10^{11}	3.15 x 10^{11}			
Estimated Efficiency of the Unit		N/A	N/A	N/A			
Heater/Combustor Manufacturer		Dorr-Oliver-Long	Dorr-Oliver-Long	Dorr-Oliver-Long			
Unit's Capacity Factor		.51	.62	.51			
Application Process		Dorrco Fluo-Solid Reactor					
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	Total = 6.75 x 10^6					
	1982(Projected)	N/A	N/A	N/A			
	Beyond '82 (Projected)	N/A	N/A	N/A			
Please Specify Type of Oil Used		No. 6	No. 6	No. 6			

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: Unit efficiency and oil consumption cannot be accurately assessed as neither fuel and air flow, nor product flow is metered to the individual units.

The above information was supplied by:

Name: Andrew Brodhend Position: Environmental Control Telephone: (709)282-3261 Ext. 266

ASSESSMENT OF POTENTIAL COAL-LIQUID MIXTURE
FUEL UTILIZATION IN CANADA

DSS CONTRACT 14SQ23440-1-9080
TASK A2.3: INDUSTRIAL OIL-FIRED PROCESS HEATERS AND COMBUSTORS

PHASE II - MARITIME PROVINCES

Name of Company: Ultramar Can. Inc.

Postal Address: Holyrood
Conception Bay, Nfld.

Name of Plant: Refinery

Postal Address: Same

Please enter data or check as appropriate:

Steam Generator Unit No.		1	2	3	4	5	6
Year of First Commercial Operation		1967					
Design Capacity (Btu/hr)		29 x 10^6					
Actual Amount of Heat (Btu's) Generated in One Year[1]		151 x 10^9*					
Estimated Efficiency of the Unit		60%					
Heater/Combustor Manufacturer		Ultramar U.O.P. Design					
Unit's Capacity Factor		.59					
Application Process		Crude Charge Preheater					
Annual Oil-Consumption Rate (Imp.Gals./yr.)	1980	1,379,700					
	1982(Projected)	696,800					
	Beyond '82 (Projected)	Same					
Please Specify Type of Oil Used		No.6					

NOTE 1: A typical figure, representative of figures recorded in recent years is requested.

Comments: This unit is run on refinery gas and oil. The oil consumption figures are only rough estimates.

The above information was supplied by:

Name: J. Edgecombe Position: Utilities & Energy Co-Ordinator Telephone: (709)229-3282

* Estimated by Monenco on the basis of annual oil consumption rate.

IRON ORE COMPANY OF CANADA

OFFICES - BUREAUX
SEPT-ILES, QUEBEC
MONTREAL, QUEBEC
SCHEFFERVILLE, QUEBEC
LABRADOR CITY, NEWFOUNDLAND - TERRE-NEUVE
ST. JOHN'S, NEWFOUNDLAND - TERRE-NEUVE

P. O. Box 1000
Labrador City, Nfld.
A2V 2L8

June 10, 1982

Moneco Limited
Maritime Region
5670 Spring Garden Road
Halifax, N.S.

Gentlemen:

This is the reply to your letter of April 20, 1982 regarding the information on oil burning equipment used at Carol Project, Labrador City.

The information on fuel oil burning equipment in our Beneficiation Plants is compiled be myself. The information in regard to our oil fired boilers is prepared by Mr. D. Bell.

Therefore, if you need any additional information or clarification of the enclosed information, do not hesitate to call us.

Yours truly,

D. Bell
General Foreman

T. Martinovic, P. Eng.
Energy Coordinator - Carol Project

/rlf
Enclosure.

. . . . . Ltd.

CC'S:

CAROL PROJECT - BENEFICIATION OF IRON ORE

CAROL CONCENTRATOR

1. Aerofall Mills - Heaters For Ore Drying

   a) Mills 1, 2, 3, 4, 5 and 6

      - Start up 1962
      - 2 heaters per mill
      - Capacity 38 X 10^6 BTU/hr per heater
      - Manufacturer: Foster-Wheeler with Hauck Burners

   b) Mills 7 and 8

      - Start up 1966
      - 2 heaters per mill
      - Capacity 38 X 10^6 BTU/hr per heater
      - Manufacturer: Foster Wheeler with Hauck Burners

   c) Mills 9 and 10

      - Start up 1973
      - 2 heaters per mill
      - Capacity 166 X 10^6 BTU/hr per heater
      - Manufacturer Aerofall Mill with Hauck Burners

      Mills 1 - 10

      a) Type of oil used:

         - Diesel oil for burner start up only
         - Bunker "C" oil for operation

Mills 1 - 10

a) Type of oil used:

- Diesel oil for burner start up only
- Bunker "C" oil for operation

b) Total Fuel Oil Consumption - All Heaters

	1980	1982
Diesel Oil Gallons	587,733	502,231
Bunker "C/ Oil Gallons	22,128,839	22,947,824
Production Concentrate tonnes	16,010,000	18,402,000

CAROL PELLET PLANT

1. Dravo Straight Travelling Grate Pelletizing Machines 1, 2, 3 and 4 (Four Pelletizing Machines

- Start up 1963
- Burner Manufacturer: North American Mfg.
- Burner type low pressure atomizing air burners
- No. of burners per one pelletizing machine:

		Capacity
8 Burners	2×10^6 BTU/hr	16
20 Burners	8×10^6 BTU/hr	160
		176×10^6

Total capacity for one pelletizing machine: 176×10^6 BTU/hr

2. Dravo Straight Travelling Grate Pelletizing Machine 5 and 6 (Two Pelletizing Machines)

- Start up date 1968
- Burner Manufacturer: North American Mfg.
- Burner type: Inspirator type
- No. of burners per one pelletizing machine:

34 burners 12×10^6 BTU/hr

Total capacity for one pelletizing machine: 408×10^6 BTU/hr

Type of Oil Used:

Bunker "C" Oil 180,000 BTU/GAL

Total Bunker "C" Oil Consumption:

	1980	1981
Gallons	44,784,917	49,650,066
Production Pellets LT	9,003,265	10,492,716

APPENDIX B

ESTIMATES OF COAL REQUIREMENTS FOR CLM APPLICATIONS

APPENDIX B

ESTIMATES OF COAL REQUIREMENTS FOR CLM APPLICATIONS

1.0 ESTIMATES OF ANNUAL COAL DEMAND

Estimates of the annual coal demand were made for the two (COM and CWM) conversion cases. These estimates were arrived at using a computer analysis program developed for this purpose.

Tables B-1 through B-3 present the summary of the computer analysis results and indicate the total annual coal demand for the converted boilers and also for the recommended replacement boilers. Table B-4 presents the annual coal demand for the converted industrial heaters and combustors. Table B-5 shows the total coal demand if every boiler, heater or combustor was to be converted to CLM. Appendix C displays the printout of the computer analysis.

1.1 METHODOLOGY

Boilers originally designed for coal firing were assumed to suffer only small losses of up to 15% in their generating capacity when converted to COM or CWM. However, boilers originally designed for oil-firing were assumed to suffer losses as large as 25% to 50% in their steaming capacity when converted to COM or CWM respectively. While no capacity reduction was assumed as a result of the combustor conversion of industrial process heaters, an efficiency loss of 15% for COM conversion and 30% for CWM conversion was used. In cases where large deratings were encountered, a replacement coal-fired boiler was inserted to make up for the lost generating capacity. The annual coal demand for replacement boilers is included in the estimated annual coal demand. The steaming capacity and the annual coal demand of the replacement boilers were established individually for each plant. A threshold loss of 20,000 lb/hr of steaming capacity was assumed to justify the installation of a replacement boiler. Losses (from all boilers at one plant) less than 20,000 lb/hr would not be compensated by replacement boilers. In actual conversion cases, the need for replacement boilers may be eliminated by increasing the current capacity factors. However, since such considerations would have required elaborated examination of each individual case, only the threshold loss was considered as the criterion for recommendation.

The heat input rates were calculated based on the given steam conditions and certain assumed boiler inlet water conditions and boiler efficiencies. The assumed conditions are noted under the tables.

The oil burn rate values are based on the actual data collected in the survey. On those boilers where no actual fuel consumption rates were given, calculated heat input rates were used.

Using the calorific values of COM and CWM fuels along with the assumed derating percentages and the proper ratios of the coal content in the CLM fuels, the coal burn rates for the converted boilers were estimated. The coal burn rates in the replacement boilers, as mentioned earlier, were calculated separately and later added to these estimates (See Table B-5). The weighted average of the current capacity factors of each boiler category was used to project the estimated annual coal demand of the converted boilers in order to maintain their present annual load. The annual coal demands by converted heaters or combustors were calculated manually and are shown in Table B-4.

Table B-5 presents the total demand figures for the three Maritime Provinces considered in this Phase.

TABLE B-1, ESTIMATED COAL DEMAND IN NEW BRUNSWICK, PEI, AND NEWFOUNDLAND DUE TO OIL CONVERSIONS OF UTILITY BOILERS

Boiler Design		Original Steaming Capacity lb/hr	No. of Units (Boilers)	Heat Input Rate[1] MW$_t$	Oil Burn Rate lb/hr	COM			CWM			Average Capacity Factor	Estimated Annual Coal Demand[5]	
						% Assumed Capacity Loss	New Capacity of Converted Boilers lb/hr	Est. Coal Burn Rate[2] lb/hr	% Assumed Capacity Loss	New Capacity of Converted Boilers lb/hr	Est. Coal Burn Rate[3] lb/hr		COM APPLICATION Short Tons / yr.	CWM APPLICATION Short Tons / yr.
Originally Designed for Coal-Firing		-	-	-	-	-	-	-	-	-	-	-	-	-
Originally Designed for Oil-Firing	Future Coal Capable	-	-	-	-	-	-	-	-	-	-	-	-	-
	Liberal Design	210,000	1	76.4	13,254	25	157,500	6,031	50	105,000	10,455	.42	11,888	20,607
	Compact Design	11,066,200	8	4,731	814,590	25	8,299,650	370,572	50	5,533,100	642,382	.48	776,107	1,345,372
												TOTAL DEMAND	787,995	1,365,979

1. Based on the following assumptions: Utility boiler efficiency of 88%; boiler inlet water conditions of 400°F and 20 psi higher than the given drum pressure; consumption of No. 6 oil with HHV of 18,500 Btu/lb.

2. Based on the following assumptions: 50% COM by weight; Donkin Mine Coal with HHV of 12,000 Btu/lb and No. 6 oil with HHV of 18,500 Btu/lb.

3. Based on the assumption of 80% coal, 20% water (by weight) CWM fuel with calorific value (HHV) of 9384 Btu/lb.

4. The total annual coal requirement for COM or CWM operation takes into account the current capacity factor of boilers.

TABLE B-2. ESTIMATED COAL DEMAND IN NEW BRUNSWICK, PEI, AND NEWFOUNDLAND DUE TO CWM CONVERSIONS OF INDUSTRIAL BOILERS

Boiler Design		Original Steaming Capacity lb/hr	No. of Units (Boilers)	Heat Input Rate[1] MW_t	Oil Burn Rate lb/hr	COM			CWM			Average Capacity Factor	Estimated Annual Coal Demand[3]	
						% Assumed Capacity Loss	New Capacity of Converted Boilers lb/hr	Est. Coal Burn Rate[2] lb/hr	% Assumed Capacity Loss	New Capacity of Converted Boilers lb/hr	Est. Coal Burn Rate[4] lb/hr		COM APPLICATION Short Tons / yr.	CWM APPLICATION Short Tons / yr.
Originally Designed for Coal-Firing		2,080,000	18	793	115,972	0	2,080,000	70,344	15	1,768,000	155,473	.43	133,182	294,357
Originally Designed for Oil-Firing	Packaged Firetube	188,700	8	67	12,657	25	141,525	5,758	50	94,350	9,991	.15	3,667	6,356
	Packaged Water-tube	2,311,000	40	815	145,213	25	1,733,250	66,060	50	1,155,500	114,515	.25 (Note 5)	73,750	127,846
	Modular & Field Erected	3,026,000	14	1,219	186,623	25	2,269,500	84,898	50	1,513,000	147,170	.45 (Note 5)	168,273	291,700
												TOTAL DEMAND	378,872	720,259

1. Based on the following assumptions: Boiler inlet water conditions of 250°F and 20 psi higher than the given drum pressure; consumption of No. 6 oil with HHV of 18,500 Btu/lb.

2. Based on the following assumptions: 50% COM by weight; Donkin Mine Coal with HHV of 12,000 Btu/lb and No. 6 oil with HHV of 18,500 Btu/lb.

3. Based on the assumption of 80% coal, 20% water (by weight) CWM fuel with HHV of 9,184 Btu/lb.

4. The total annual coal requirement for COM or CWM operation takes into account the current capacity factor of boilers.

5. In case of dual fuel boilers, this value is based on the oil contribution alone.

Table B-3, Estimated Coal Demand by Replacement Boilers

Boiler Category	COM		CWM	
	Lost Steaming Capacity lb/hr	Est. Coal Demand s.t./yr	Lost Steaming Capacity lb/hr	Est. Coal Demanded s.t./yr
Utility	2,819,050	632,060	5,638,100	1,264,120
Industrial	1,381,425	244,412	3,074,850	577,816
Total Demand		876,472		1,841,936

TABLE B-4, ESTIMATED COAL DEMAND IN NEW BRUNSWICK, PEI, AND NEWFOUNDLAND DUE TO CLM CONVERSIONS

INDUSTRIAL PROCESS HEATERS AND COMBUSTORS

Heater/Combustor Original Design and Industrial User		No. of Units	Heat Input Rate MW	Oil Burn Rate lb/hr	COM[1]		CWM[2]		Average Capacity Factor	Estimated Annual Coal Demand[4]	
					% Assumed Capacity Loss	Est. Coal Burn Rate[3] lb/hr	% Assumed Capacity Loss	Est. Coal Burn Rate[3] lb/hr		COM APPLICATION Short Tons yr.	CWM APPLICATION Short Tons yr.
Oil-Firing	Steel	26	1,327	234,000	0	166,621	0	526,130	.35	255,430	806,555
	Other	9	138	29,830	0	19,850	0	62,452	.48	41,730	131,300
									Total Demand	297,160	937,855

1. 50/50 Coal-oil mixture by weight.

2. 80/20 Coal-water mixture by weight.

3. Assuming 15% efficiency loss for COM conversion and 30% efficiency loss for CWM conversion.

4. Figures include the estimates for conversion of six pelletizing machines (owned by the Iron Ore Co. of Canada). Conversion to CLM fuels would require modification of these units from direct to indirect heating in order to prevent contamination of the product by the high ash and sulphur content of coal.

TABLE B-5

TOTAL ESTIMATED COAL DEMAND

DUE TO CLM CONVERSION

	COM	CWM
Demand by Utility Boilers (from Table B-1)	787,995	1,365,979
Demand by Industrial Boilers (from Table B-2)	378,872	720,259
Demand by Utility/Industrial Replacement Boilers (from Table B-3)	876,472	1,841,936
Demand by Industrial Process Heaters/ Combustors (from Table B-4)	297,160	937,855
Total Demand, s.t./yr	2,340,499	4,866,029
Rounded to	2,340,000	4,870,000

APPENDIX C

COMPUTER ANALYSIS OF THE COLLECTED DATA

COMPUTER PRINTOUT C-1

This printout lists all boilers covered in the survey, according to their original design category:

GROUP 1	Industrial boilers originally designed for coal-firing.
GROUP 2	Industrial boilers originally designed for oil-firing; packaged firetube.
GROUP 3	Industrial boilers originally designed for oil-firing; packaged watertube.
GROUP 4	Industrial boilers originally designed for oil-firing; modular and field-erected.
GROUP 5	Utility boilers originally designed for coal-firing.
GROUP 6	Utility boilers originally designed for oil-firing; future coal capable.
GROUP 7	Utility boilers originally designed for oil-firing; liberal.
GROUP 8	Utility boilers originally designed for oil-firing; compact.

LEGEND

TOTSTM: Total Steaming Capacity
THEAT: Total Heat Input Rate
TOBR: Total Oil Burn Rate
AVECF: Average Capacity Factor

DERAT1: Derating Factor Assumed for Conversion to COM
TNCAP1: Total Steaming Capacity of COM Converted Boilers
TOTCOM: Total Coal Burn Rate of Boilers Converted to COM
COMEST: Annual Coal Demand of Boilers Converted to COM

Subcode 2 or CWM refer to the above values when applied to the CWM Case.

GROUP 1 OWNERS	HG	HF
ABITBY PRC	1331.94	219.51
ABITBY PRC	1331.94	219.51
ABITBY PRC	1331.94	219.51
ATLTC SUGR	1293.98	219.42
ATLTC SUGR	1293.98	219.42
SOLIC GEN	1250.56	218.85
SOLIC GEN	1250.56	218.85
SOLIC GEN	1250.56	218.85
CONS BATH	1366.50	219.90
CIP INC	1331.94	219.51
FRASER INC	1351.36	219.81
FRASER INC	1439.07	376.25
BOISE CAS	1378.76	219.87
BOWAT NFLD	1196.08	218.89
BOWAT NFLD	1196.08	218.89
BOWAT NFLD	1202.37	219.10
BOWAT NFLD	1202.37	219.10
BOWAT NFLD	1202.37	219.10

TOTSIM(LB/HR)= 2080000.0 THEAT(MMT)= 792.7 TOBR(LB/HR)= 115972.0 AVECF= .43
DERAT1=1.00 TNCAP1(LB/HR)= 2080000.0 TOTCOM(LB/HR)= 70343.7 COMEST(ST/YR)= 133181.5
DERAT2= .85 TNCAP2(LB/HR)= 1768000.0 TOTCWM(LB/HR)= 155473.4 CWMEST(ST/YR)= 294357.4

GROUP 2 OWNERS	HG	HF
PROD GULF	1196.71	218.89
ST.J.HOSP	1193.42	218.85
ST.J.HOSP	1193.42	218.85
ST.J.HOSP	1193.42	218.85
NATL SEA	1190.01	218.79
NATL SEA	1190.01	218.79
PUB WORKS	1195.09	218.87
PUB WORKS	1195.09	218.87

TOTSIM(LB/HR)= 188700.0 THEAT(MMT)= 67.0 TOBR(LB/HR)= 12656.6 AVECF= .15
DERAT1= .75 TNCAP1(LB/HR)= 141525.0 TOTCOM(LB/HR)= 5757.7 COMEST(ST/YR)= 3666.5
DERAT2= .50 TNCAP2(LB/HR)= 94350.0 TOTCWM(LB/HR)= 9980.9 CWMEST(ST/YR)= 6355.9

GROUP 3 OWNERS	HG	HF
BELDUN FER	1196.08	218.89
BELDUN FER	1196.08	218.89
ULTRAMAR	1198.52	218.95
MEMO UNIV	1198.52	218.95
MEMO UNIV	1198.52	218.95
MEMO UNIV	1198.52	218.95
ACADIA FOR	1200.38	218.97
ST.J.SHIP	1196.08	218.89
BRNSWK MIN	1194.31	218.86
BRNSWK MIN	1194.31	218.86
BRNSWK MIN	1194.31	218.86
MOUS HO BR	1189.42	218.79
UNIV MONCT	1199.32	218.99
UNIV MONCT	1199.32	218.99

MT.ALSN UN	1190.01	218.79
MT.ALSN UN	1190.01	218.79
MT.ALSN UN	1190.01	218.79
MONCTN HOS	1192.69	218.83
MONCTN HOS	1192.69	218.83
UNIV N.B.	1203.07	219.10
UNIV N.B.	1203.07	219.10
LEBAIS HB	1193.42	218.85
CONS BATH	1199.81	218.94
KIMBERLY	1200.69	219.03
MC CAIN	1205.70	219.20
MC CAIN	1205.70	219.20
MC CAIN	1205.70	219.20
MC CAIN	1205.70	219.20
MC CAIN	1205.70	219.20
MC CAIN	1205.70	219.20
LAKE UTOP	1199.32	218.99
LAKE UTOP	1199.32	218.99
LAKE UTOP	1199.32	218.99
CAVENDISH	1258.75	219.16
CAVENDISH	1245.14	219.18
CONNORS BR	1212.49	218.95
CONNORS BR	1212.49	218.95
CONNORS BR	1193.42	218.85
IRON ORE	1197.37	218.92
IRON ORE	1197.37	218.92

TOTSTM(LB/HR)= 2311000.0 THEAT(MWT)= 815.1 TOBR(LB/HR)= 145213.4 AVECF= .25
DERAT1= .75 TNCAP1(LB/HR)= 1733250.0 TOTCOM(LB/HR)= 66060.2 COMEST(ST/YR)= 73750.7
DERAT2= .50 TNCAP2(LB/HR)= 1155500.0 TOTCWM(LB/HR)= 114514.6 CWMEST(ST/YR)= 127846.0

GROUP 4 OWNERS	HG	HF
WABUSH MIN	1199.32	218.99
WABUSH MIN	1199.32	218.99
ABITBY PRC	1351.36	219.81
ABITBY PRC	1331.94	219.51
ATLTC SUGR	1348.55	219.42
FRASER INC	1363.20	220.02
FRASER INC	1363.20	220.02
CONS BATH	1408.72	376.25
CIP INC	1331.94	219.51
CIP INC	1331.94	219.51
PARSONS	1348.60	220.43
FRASER INC	1380.03	219.81
FRASER INC	1468.70	376.25
BOWAT NFLD	1362.94	219.81

TOTSTM(LB/HR)= 3026000.0 THEAT(MWT)= 1219.3 TOBR(LB/HR)= 186622.9 AVECF= .45
DERAT1= .75 TNCAP1(LB/HR)= 2269500.0 TOTCOM(LB/HR)= 84898.1 COMEST(ST/YR)= 168273.0
DERAT2= .50 TNCAP2(LB/HR)= 1513000.0 TOTCWM(LB/HR)= 147169.8 CWMEST(ST/YR)= 291699.2

GROUP 7 OWNERS	HG	HF
COURTENAY	1468.70	376.25

TOTSTM(LB/HR)= 210000.0 THEAT(MWT)= 76.4 TOBR(LB/HR)= 13258.1 AVECF= .45
DERAT1= .75 TNCAP1(LB/HR)= 157500.0 TOTCOM(LB/HR)= 6031.3 COMEST(ST/YR)= 11887.8
DERAT2= .50 TNCAP2(LB/HR)= 105000.0 TOTCWM(LB/HR)= 10455.2 CWMEST(ST/YR)= 20607.3

GROUP 8 OWNERS	HG		HF	
HOLYROOD	1480.82	377.04	1523.65	1348.12
HOLYROOD	1480.82	377.04	1523.65	1348.12
HOLYROOD	1480.82	377.04	1523.65	1348.12
COLESON	1463.13	377.73	1524.97	1300.48
COLESON	1463.13	377.73	1524.97	1300.48
COLESON	1463.13	377.73	1524.97	1300.48
COURTENAY	1480.88	376.92	1524.57	1271.41
COURTENAY	1480.88	376.92	1524.57	1271.41

TOTSTM(LB/HR)= 11066200.0 THEAT(MWT)= 4730.7 TOBR(LB/HR)= 814590.1 AVECF= .48
DERAT1= .75 TNCAP1(LB/HR)= 8299650.0 TOTCOM(LB/HR)= 370571.7 COMEST(ST/YR)= 776106.9
DERAT2= .50 TNCAP2(LB/HR)= 5533100.0 TOTCWM(LB/HR)= 642381.5 CWMEST(ST/YR)= 1345371.8

OWNER: ABITBY PRC
LOCATION: 201
TLSTM1= 112500.0 RHEST1= 15284.3 AVCF1= .25
TLSTM2= 225000.0 RHEST2= 30568.6 AVCF2= .25

OWNER: ABITBY PRC
LOCATION: 202
TLSTM1= 62500.0 RHEST1= 12688.7 AVCF1= .38
TLSTM2= 184000.0 RHEST2= 37157.6 AVCF2= .37

OWNER: ACADIA FOR
LOCATION: 305
NO REP. BOILER NEEDED FOR COM CONVERSION
TLSTM2= 30000.0 RHEST2= 282.8 AVCF2= .02

OWNER: ATLTC SUGR
LOCATION: 306
TLSTM1= 20000.0 RHEST1= 5748.3 AVCF1= .53
TLSTM2= 58000.0 RHEST2= 16419.5 AVCF2= .53

OWNER: BELDUN FER
LOCATION: 308
TLSTM1= 42500.0 RHEST1= 4687.2 AVCF1= .23
TLSTM2= 85000.0 RHEST2= 9374.5 AVCF2= .23

OWNER: BOISE CAS
LOCATION: 331
NO REP. BOILER NEEDED FOR COM CONVERSION
TLSTM2= 43500.0 RHEST2= 9926.5 AVCF2= .41

OWNER: BOWAT NFLD
LOCATION: 211
TLSTM1= 35000.0 RHEST1= 12105.5 AVCF1= .63
TLSTM2= 142000.0 RHEST2= 45581.4 AVCF2= .63

OWNER: BRNSWK MIN
LOCATION: 309
TLSTM1= 53500.0 RHEST1= 11730.3 AVCF1= .47
TLSTM2= 107000.0 RHEST2= 23461.1 AVCF2= .47

OWNER: CAVENDISH
LOCATION: 328
TLSTM1= 39250.0 RHEST1= 2874.4 AVCF1= .15
TLSTM2= 78500.0 RHEST2= 5748.9 AVCF2= .15

OWNER: CIP INC
LOCATION: 321
TLSTM1= 150000.0 RHEST1= 41672.3 AVCF1= .52
TLSTM2= 330000.0 RHEST2= 89916.0 AVCF2= .51

OWNER: COLESON
LOCATION: 350
TLSTM1= 1618500.0 RHEST1= 352033.2 AVCF1= .47
TLSTM2= 3237000.0 RHEST2= 704066.4 AVCF2= .47

OWNER: CONNORS BR
LOCATION: 329
NO REP. BOILER NEEDED FOR COM CONVERSION
TLSTM2= 30000.0 RHEST2= 1288.3 AVCF2= .09

OWNER: CONNORS BR					
LOCATION: 330	NO REP. BOILER NEEDED FOR COM CONVERSION				
	NO REP. BOILER NEEDED FOR CWM CONVERSION				
OWNER: CONS BATH					
LOCATION: 320	TLSTM1=	42000.0	RHEST1=	7112.3	AVCF1= .35
	TLSTM2=	110250.0	RHEST2=	21790.1	AVCF2= .39
OWNER: COURTENAY					
LOCATION: 35:	TLSTM1=	407500.0	RHEST1=	152356.8	AVCF1= .79
	TLSTM2=	815000.0	RHEST2=	304713.3	AVCF2= .79
OWNER: FRASER INC					
LOCATION: 311	TLSTM1=	67500.0	RHEST1=	30388.5	AVCF1= .82
	TLSTM2=	135000.0	RHEST2=	60777.1	AVCF2= .82
OWNER: FRASER INC					
LOCATION: 323	TLSTM1=	129500.0	RHEST1=	20442.1	AVCF1= .30
	TLSTM2=	307000.0	RHEST2=	46901.0	AVCF2= .29
OWNER: HOLYROOD					
LOCATION: 250	TLSTM1=	793050.0	RHEST1=	127670.0	AVCF1= .34
	TLSTM2=	1586100.0	RHEST2=	255340.0	AVCF2= .34
OWNER: IRON ORE					
LOCATION: 220	TLSTM1=	62500.0	RHEST1=	5286.5	AVCF1= .18
	TLSTM2=	125000.0	RHEST2=	10573.1	AVCF2= .18
OWNER: KIMBERLY					
LOCATION: 324	NO REP. BOILER NEEDED FOR COM CONVERSION				
	TLSTM2=	25000.0	RHEST2=	3889.4	AVCF2= .33
OWNER: LAKE UTOP					
LOCATION: 327	TLSTM1=	50000.0	RHEST1=	11063.9	AVCF1= .47
	TLSTM2=	100000.0	RHEST2=	22128.3	AVCF2= .47
OWNER: LEBATS NB					
LOCATION: 318	NO REP. BOILER NEEDED FOR COM CONVERSION				
	NO REP. BOILER NEEDED FOR CWM CONVERSION				
OWNER: MC CAIN					
LOCATION: 325	TLSTM1=	27500.0	RHEST1=	3778.5	AVCF1= .29
	TLSTM2=	55000.0	RHEST2=	7556.9	AVCF2= .29
OWNER: MC CAIN					
LOCATION: 326	TLSTM1=	34250.0	RHEST1=	6705.1	AVCF1= .37
	TLSTM2=	76500.0	RHEST2=	13410.5	AVCF2= .37

OWNER: MEMO UNIV
LOCATION: 204

TLSTM1= 40000.0 RHEST1= 3998.8 AVCF1= .21
TLSTM2= 80000.0 RHEST2= 7997.7 AVCF2= .21

OWNER: MONCTN HOS
LOCATION: 315

NO REP. BOILER NEEDED FOR COM CONVERSION

OWNER: MODS HD BR
LOCATION: 310

TLSTM2= 27500.0 RHEST2= 1824.0 AVCF2= .14

NO REP. BOILER NEEDED FOR COM CONVERSION
NO REP. BOILER NEEDED FOR CHM CONVERSION

OWNER: MT.ALSN UN
LOCATION: 314

TLSTM1= 22500.0 RHEST1= 1504.3 AVCF1= .14
TLSTM2= 45000.0 RHEST2= 3008.5 AVCF2= .14

OWNER: NATL SEA
LOCATION: 319

NO REP. BOILER NEEDED FOR COM CONVERSION
TLSTM2= 24150.0 RHEST2= 1239.1 AVCF2= .11

OWNER: PARSONS
LOCATION: 322

TLSTM1= 100000.0 RHEST1= 39010.7 AVCF1= .72
TLSTM2= 200000.0 RHEST2= 78021.3 AVCF2= .72

OWNER: PROD GULF
LOCATION: 307

NO REP. BOILER NEEDED FOR COM CONVERSION
NO REP. BOILER NEEDED FOR CHM CONVERSION

OWNER: PUB WORKS
LOCATION: 210

NO REP. BOILER NEEDED FOR COM CONVERSION
TLSTM2= 20700.0 RHEST2= 1746.9 AVCF2= .18

OWNER: SONIC GEN
LOCATION: 316

NO REP. BOILER NEEDED FOR COM CONVERSION
NO REP. BOILER NEEDED FOR CHM CONVERSION

OWNER: ST.J.HOSP
LOCATION: 312

NO REP. BOILER NEEDED FOR COM CONVERSION
TLSTM2= 37500.0 RHEST2= 2983.9 AVCF2= .17

OWNER: ST.J.SHIP
LOCATION: 308

NO REP. BOILER NEEDED FOR COM CONVERSION
TLSTM2= 25000.0 RHEST2= 3050.5 AVCF2= .26

OWNER: ULTRAMAR
LOCATION: 203

NO REP. BOILER NEEDED FOR COM CONVERSION
TLSTM2= 23500.0 RHEST2= 4532.8 AVCF2= .41

OWNER: UNIV MONCT
LOCATION: 313

TLSTM1=	25000.0	RMEST1=	2236.3	AVCF1= .19
TLSTM2=	50000.0	RMEST2=	4472.7	AVCF2= .19

OWNER: UNIV N.B.
LOCATION: 317

TLSTM1=	60000.0	RMEST1=	5387.3	AVCF1= .19
TLSTM2=	120000.0	RMEST2=	10774.5	AVCF2= .19

OWNER: WABUSH MIN
LOCATION: 200

TLSTM1=	50000.0	RMEST1=	706.2	AVCF1= .03
TLSTM2=	100000.0	RMEST2=	1412.4	AVCF2= .03

TOTAL COM COAL DEM. (IND. & UTIL.),S.T./YR = 876471.7
TOTAL CAN COAL DEM. (IND.& UTIL.),S.T./YR = 1841935.7

POOR

QUALITY

ORIGINAL